DAIKIN

SiUS281117

R-410A

Service Manual

SkyAir

RZR-P, RZQ-P(9) Series
Cooling Only / Heat Pump
R-410A 60Hz



RZR-P, RZQ-P(9) Series Cooling Only / Heat Pump R-410A 60Hz

ED Reference

For items below, please refer to Engineering Data.
For except FTQ

No.	Item	ED No.	Page	Remarks
1	Specification - Cooling Only	EDUS281120	p. 7-13	
2	Specification - Heat Pump	EDUS281120	p. 14-20	
3	Option List	EDUS281120	p. 100-102	

For FTQ

No.	Item	ED No.	Page	Remarks
1	Specification - Heat Pump	EDUS281008	p. 4	
2	Option List	EDUS281008	p. 60	

1. Safety Considerations

Read these ***SAFETY CONSIDERATIONS*** carefully before performing any repair work. Comply with these safety symbols without fail.Meanings of **DANGER**, **WARNING**, **CAUTION**, and **NOTE** Symbols:

⚠ **DANGER** .... Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ **WARNING** .... Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION** .... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

⚠ **NOTE** .... Indicates situations that may result in equipment or property-damage accidents only.

1.1 Safety Considerations for Repair

- **If refrigerant gas leaks during repair or service, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes into contact with flames. Refrigerant gas is heavier than air and replaces oxygen. In the event of an accident, a massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**

- **Do not start or stop the air conditioner operation by plugging or unplugging the power cable plug if a plug is used. Plugging or unplugging the power cable plug to operate the equipment may cause an electrical shock or fire.**

- **Use parts listed in the service parts list and appropriate tools to conduct repair work. The use of inappropriate parts or tools may cause an electrical shock or fire.**

- **Disconnect power before disassembling the equipment for repairs. Working on the equipment that is connected to the power supply may cause an electric shock. If it is necessary to supply power to the equipment to conduct repairs or to inspect the circuits, do not touch any electrically charged sections of the equipment.**

- **The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit. Discharge the capacitor completely before conducting repair work. A charged capacitor may cause an electrical shock.**

- **If refrigerant gas is discharged during repair work, do not touch the discharged refrigerant gas. The refrigerant gas may cause frostbite.**

- **Use only pipes, flare nuts, tools, and other materials designed specifically for R410A refrigerant systems. Never use tools or materials designed for R22 refrigerant systems on an R410A refrigerant system. Doing so can cause a serious accident or an equipment failure.**

- **Check to see if the parts and wires are mounted and connected properly, and if the connections at the soldered or crimped terminals are secure. Improper installation and connections may cause excessive heat generation, fire, or electrical shock.**
- **Prior to disconnecting the suction or discharge pipe from the compressor at the welded section, pump-down the refrigerant gas completely in a well-ventilated place first. If there is refrigerant gas or oil remaining inside the compressor, the refrigerant gas or oil can discharge when the pipe is being disconnected and it may cause an injury.**

- **Wear a safety helmet, gloves, and a safety belt when working at an elevated height of more than 6.5 ft (2 m). Insufficient safety measures may cause a fall resulting in injury.**

- **Do not mix air or gas other than the specified refrigerant R410A to the refrigerant system. If air enters the refrigerant systems, it can cause an excessive high pressure resulting in equipment damage and injury.**

- **When relocating the equipment, check if the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and the equipment is not properly secured, the equipment may fall and cause injury.**

- **Securely fasten the outside unit terminal cover (panel). If the terminal cover/panel is not fastened properly, dust or water may enter the outside unit causing fire or electric shock.**

- **When relocating the system, keep the refrigerant circuit free from substances other than the specified refrigerant (R-410A) such as air. Any presence of air or other foreign substance in the refrigerant circuit can cause an abnormal pressure rise or rupture, resulting in injury.**

- **If refrigerant gas leaks, locate the leaking point and repair it before charging refrigerant. After charging refrigerant, check for refrigerant leaks. If the leaking point cannot be located and the repair work must be stopped, perform a pump-down and close the service valve to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it may generate toxic gases if it comes into contact with flames.**

- **Do not repair the electrical components with wet hands. Working on the equipment with wet hands may cause an electrical shock.**

- **Do not clean the air conditioner by splashing water on it. Washing the unit with water may cause an electrical shock.**
- **Ground the unit when repairing equipment in a humid or wet place to avoid electrical shocks.**
- **Turn off the power when cleaning the equipment to prevent internal fans that rotate at high speed from starting suddenly as they can cause injury.**
- **Let the refrigerant lines cool down before performing any repair work. Working on the unit when the refrigerant lines are hot may cause burns.**
- **All welding and cutting operations must be done in a well-ventilated place to prevent the accumulation of toxic fumes or possibly oxygen deficiency to occur.**
- **Check the grounding and repair it if the equipment is not properly grounded. Improper grounding may cause an electrical shock.**
- **Measure the insulation resistance after the repair.**

  The resistance must be 1MΩ or higher. Faulty insulation may cause an electrical shock.
- **Check the drainage of the indoor unit after finishing repair work. Faulty drainage may cause water to enter the room resulting in wet floors and furniture.**
- **Do not tilt the unit when removing it. The water inside the unit may spill resulting in wet floors and furniture.**
- **Dismantling of the unit, disposal of the refrigerant, oil, and additional parts, should be done in accordance with the relevant local, state, and national regulations.**

1.2 Safety Considerations for Users

- **Never attempt to modify the equipment. Doing so can cause electrical shock, excessive heat generation, or fire.**
- **If the power cable and lead wires have scratches or have become deteriorated, have them replaced. Damaged cable and wires may cause an electrical shock or fire.**
- **Do not use a joined power cable or an extension cord, or share the same power outlet with other electrical appliances as it may cause an electrical shock or fire.**
- **Use an exclusive power circuit for the equipment. Insufficient circuit amperage capacity may cause an electrical shock or fire.**
- **Do not damage or modify the power cable. Damaged or modified power cables may cause an electrical shock or fire. Placing heavy items on the power cable or pulling the power cable may damage the cable.**
- **Check the unit foundation for damage on a continual basis, especially if it has been in use for a long time. If left in a damaged condition, the unit may fall and cause injury. If the installation platform or frame has corroded, have it replaced. A corroded platform or frame may cause the unit to fall resulting in injury.**
- **If the unit has a power cable plug and it is dirty, clean the plug before securely inserting it into a power outlet. If the plug has a loose connection, tighten it or it may cause electrical shock or fire.**
- **After replacing the battery in the remote controller, dispose of the old battery to prevent children from swallowing it. If a child swallows the battery, see a doctor immediately.**
- **Never remove the fan guard of the unit. A fan rotating at high speed without the fan guard is very dangerous.**
- **Before cleaning the unit, stop the operation of the unit by turning the power off or by pulling the power cable plug out from its receptacle. Otherwise an electrical shock or injury may result.**
- **Do not wipe the controller operation panel with benzene, thinner, chemical dust cloth, etc. The panel may get discolored or the coating can peel off. If it is extremely dirty, soak a cloth in a water-diluted neutral detergent, squeeze it well, and wipe the panel clean. Then wipe it with another dry cloth.**

Part 1
General Information

Part 2
Refrigerant Circuit

1. Model Names and Power Supply

1.1 Cooling Only

Indoor unit		Outdoor unit	Power supply, Compatibility symbol
Ceiling mounted cassette type (Round flow)	FCQ18PAVJU*	RZR18PVJU	VJU
	FCQ24PAVJU*	RZR24PVJU	
	FCQ30PAVJU*	RZR30PVJU	
	FCQ36PAVJU*	RZR36PVJU	
	FCQ42PAVJU*	RZR42PVJU	
Ceiling suspended type	FHQ18PVJU	RZR18PVJU	
	FHQ24PVJU	RZR24PVJU	
	FHQ30PVJU	RZR30PVJU	
	FHQ36MVJU	RZR36PVJU	
	FHQ42MVJU	RZR42PVJU	
Wall mounted type	FAQ18PVJU	RZR18PVJU	
	FAQ24PVJU	RZR24PVJU	
Ceiling mounted duct type	FBQ18PVJU*	RZR18PVJU	
	FBQ24PVJU*	RZR24PVJU	
	FBQ30PVJU*	RZR30PVJU	
	FBQ36PVJU*	RZR36PVJU	
	FBQ42PVJU*	RZR42PVJU	

Note:
1. * : New model or changed model
2. Power supply intake: outdoor unit
3. VJ: 1 phase, 208/230V, 60Hz
   U (VJU, TJU): Standard Compatibility Symbol

1.2 Heat Pump

Indoor unit		Outdoor unit	Power supply, Compatibility symbol
Ceiling mounted cassette type (Round flow)	FCQ18PAVJU*	RZQ18PVJU9	VJU
	FCQ24PAVJU*	RZQ24PVJU9	
	FCQ30PAVJU*	RZQ30PVJU	
	FCQ36PAVJU*	RZQ36PVJU9	
	FCQ42PAVJU*	RZQ42PVJU9	
Ceiling suspended type	FHQ18PVJU	RZQ18PVJU9	
	FHQ24PVJU	RZQ24PVJU9	
	FHQ30PVJU	RZQ30PVJU	
	FHQ36MVJU	RZQ36PVJU9	
	FHQ42MVJU	RZQ42PVJU9	
Wall mounted type	FAQ18PVJU	RZQ18PVJU9	
	FAQ24PVJU	RZQ24PVJU9	
Ceiling mounted duct type	FBQ18PVJU*	RZQ18PVJU9	
	FBQ24PVJU*	RZQ24PVJU9	
	FBQ30PVJU*	RZQ30PVJU	
	FBQ36PVJU*	RZQ36PVJU9	
	FBQ42PVJU*	RZQ42PVJU9	
Air handling unit	FTQ18PAVJU	RZQ18PVJU	
	FTQ24PAVJU	RZQ24PVJU	

Note:
1. * : New model or changed model
2. Power supply intake: outdoor unit
3. VJ: 1 phase, 208/230V, 60Hz
   U (VJU, TJU): Standard Compatibility Symbol

2. External Appearance

2.1 Indoor Units

Ceiling Mounted Cassette Type (Round Flow)

FCQ18PAVJU
FCQ24PAVJU
FCQ30PAVJU
FCQ36PAVJU
FCQ42PAVJU



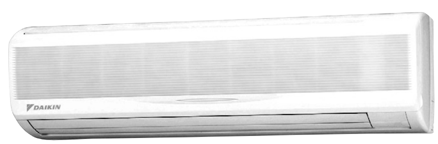
Ceiling Suspended Type

FHQ18PVJU
FHQ24PVJU
FHQ30PVJU
FHQ36MVJU
FHQ42MVJU



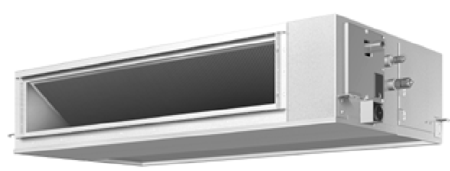
Wall Mounted Type

FAQ18PVJU
FAQ24PVJU



Ceiling Mounted Duct Type

FBQ18PVJU
FBQ24PVJU
FBQ30PVJU
FBQ36PVJU
FBQ42PVJU



Air Handling Unit

FTQ18PAVJU
FTQ24PAVJU



2.2 Remote Controller

Wired Type



BRC1D71



BRC1E71

2.3 Outdoor Units

RZR18PVJU
RZR24PVJU
RZR30PVJU
RZQ18PVJU9
RZQ24PVJU9
RZQ30PVJU



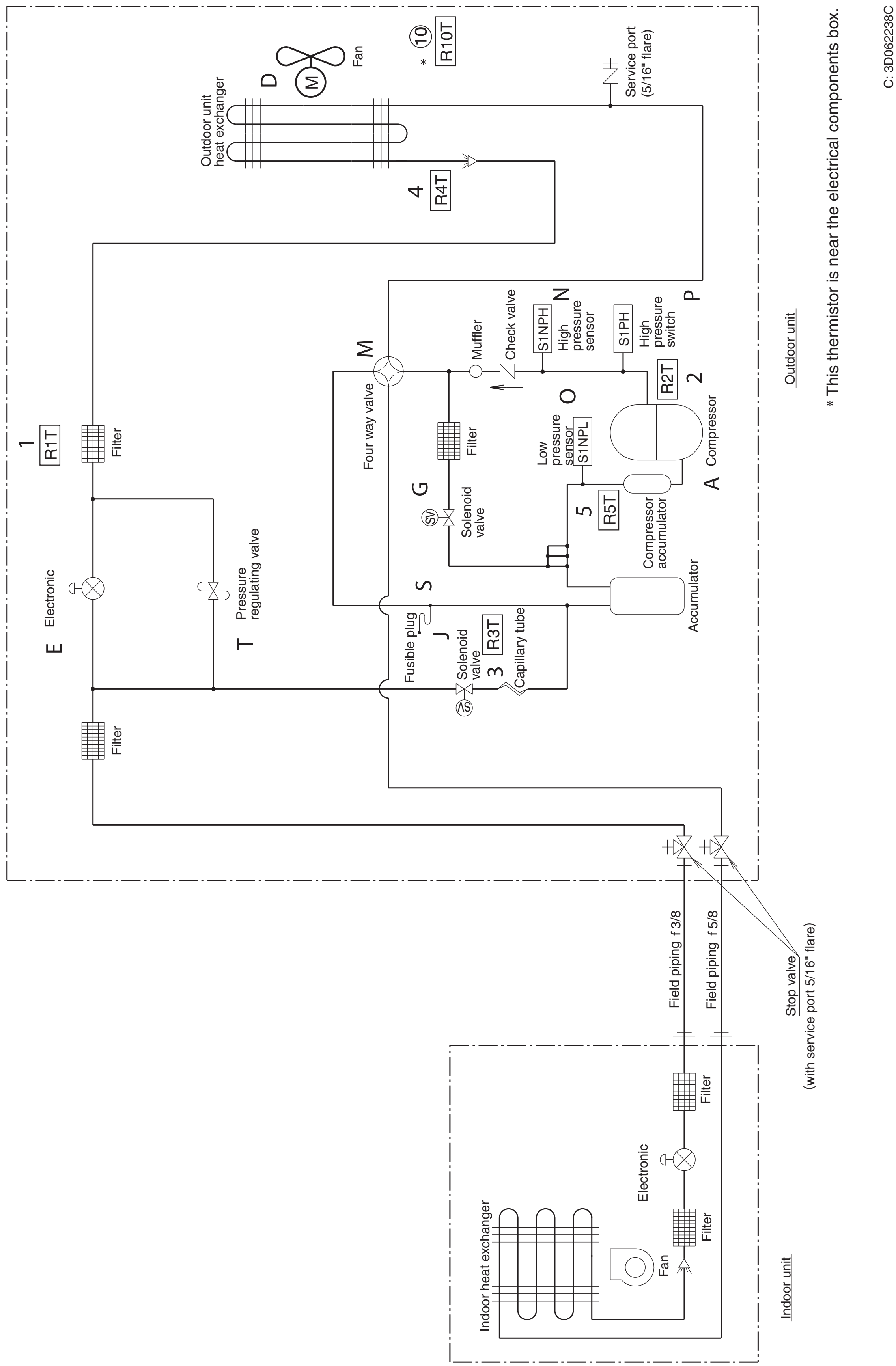
RZR36PVJU
RZR42PVJU
RZQ36PVJU9
RZQ42PVJU9



1. Refrigerant Circuit

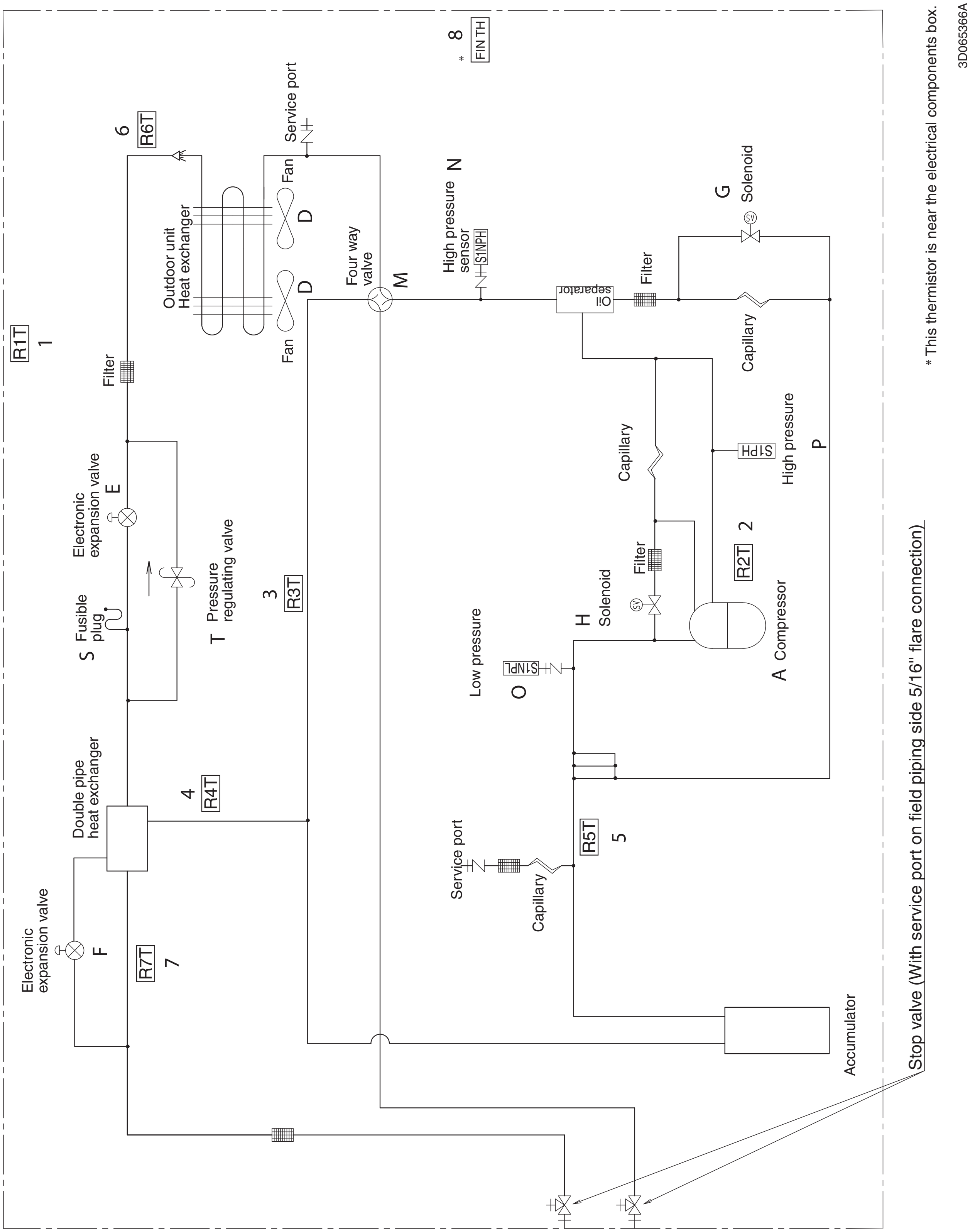
1.1 RZR18 / 24 / 30PVJU RZQ18 / 24PVJU9 RZQ30PVJU

No. in refrigerant system diagram	Electric Symbol	Name	Major Function
A	M1C	Inverter compressor (INV.)	Inverter compressor is operated on frequencies between 52 Hz and 177 Hz by using the inverter. 17 steps
D	M1F	Inverter fan	Because the system is an air heat exchange type, the fan is operated at 8-step rotation speed by using the inverter.
E	Y1E	Electronic expansion valve (Main: EV1)	While in heating operation, PI control is applied to keep the outlet superheated degree of air heat exchanger constant.
G	Y2S	Solenoid valve (Hot gas: SVP)	Prevents the low pressure from transient falling.
J	Y3S	Solenoid valve (Receiver gas discharging: SVG)	Collects refrigerant to receiver.
M	Y1S	Four-way valve	Switches the operation mode between cooling and heating.
N	S1NPH	High pressure sensor	Detects high pressure.
O	S1NPL	Low pressure sensor	Detects low pressure.
P	S1PH	High pressure switch (For INV. compressor)	In order to prevent the increase of high pressure when an error occurs, this switch is activated at high pressure of 580 psi or more to stop the compressor operation.
S	—	Fusible plug	In order to prevent the increase of pressure when abnormal heating is caused by fire or others, the fusible part of the plug is molten at a temperature of 158 to 167°F to release the pressure into the atmosphere.
T	—	Pressure regulating valve 1 (Receiver to discharge pipe)	This valve opens at a pressure of 580 psi for prevention of pressure increase, thus resulting in no damage of functional parts due to the increase of pressure in transportation or storage.
1	R1T	Thermistor (Outdoor air: Ta)	Detects outdoor air temperature, correct discharge pipe temperature, and others.
2	R2T	Thermistor (Discharge pipe: Tdi)	Detects discharge pipe temperature, make the temperature protection control of compressor, and others.
3	R3T	Thermistor (Suction pipe 1: Ts1)	Detects suction pipe temperature, keep the suction superheated degree constant in heating operation, and others.
4	R4T	Thermistor (Heat exchanger deicer: Tb)	Detects liquid pipe temperature of air heat exchanger, determine defrosting operation, and others.
5	R5T	Thermistor (Suction pipe 2: Ts2)	Calculates internal temperature of compressor.
10	R10T	Thermistor (Radiation fin)	• Outdoor unit fan speed control. • Inverter radiation fin temperature control. • Pressure difference control.


Outdoor unit heat exchanger
D
M
Fan
* 10
R10T
Service port (5/16" flare)
4
R4T
1
R1T
Filter
M
Four way valve
Muffler
Check valve
S1NPH
N
High pressure sensor
S1PH
High pressure switch
P
R2T
2
O
Low pressure sensor
S1NPL
Compressor
A
Filter
G
Solenoid valve
5
R5T
Compressor accumulator
Electronic
E
Pressure regulating valve
T
S
Accumulator
Fusible plug
J
Solenoid valve
R3T
3
Capillary tube
Filter
Outdoor unit
Field piping f 3/8
Field piping f 5/8
Stop valve (with service port 5/16" flare)
Indoor heat exchanger
Electronic
Filter
Fan
Filter
Indoor unit
* This thermistor is near the electrical components box.
C: 3D062238C

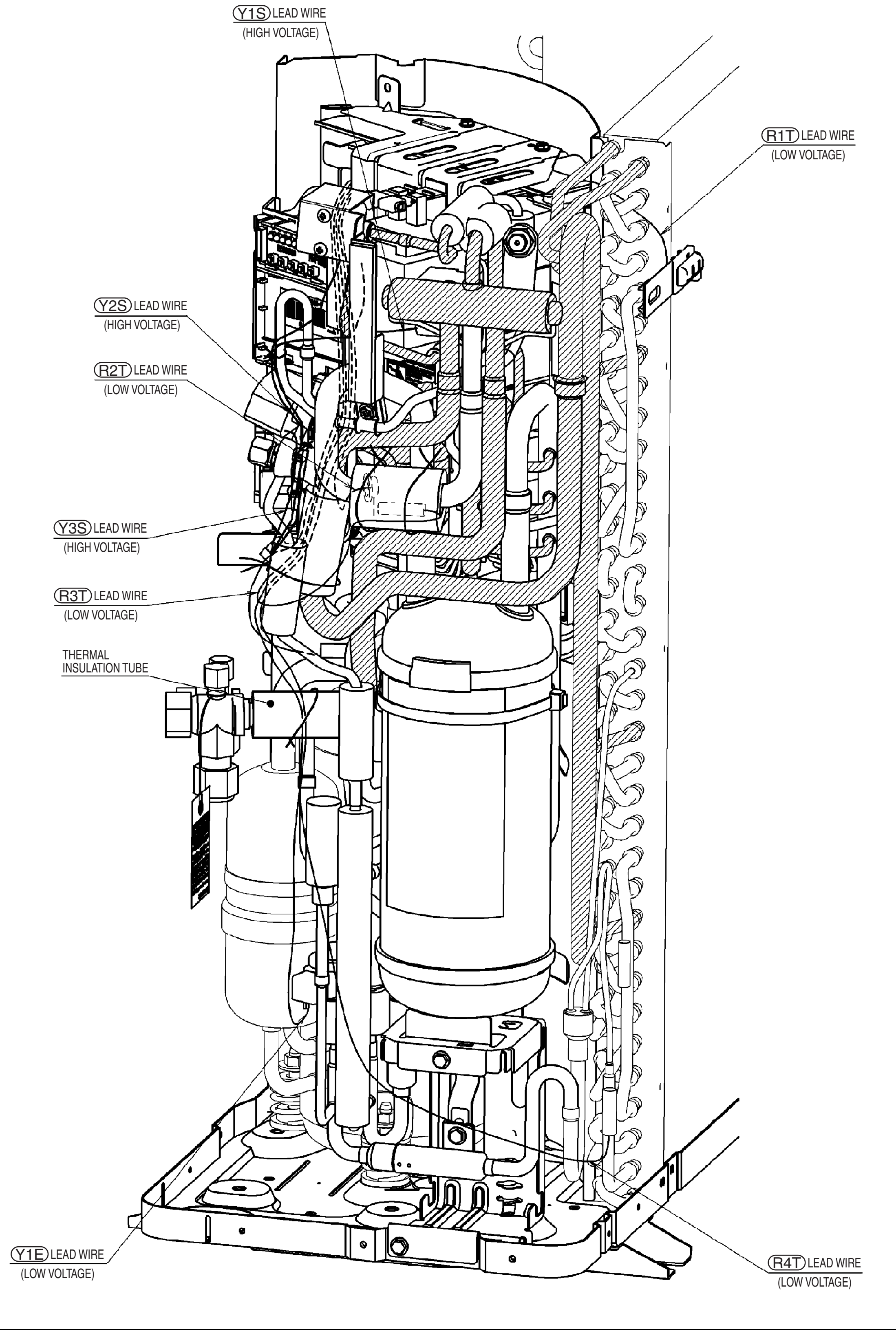
1.2 RZR36 / 42PVJU RZQ36 / 42PVJU(9)

No. in refrigerant system diagram	Electric Symbol	Name	Major Function
A	M1C	Inverter compressor (INV.)	Inverter compressor is operated on frequencies between 36 Hz and 195 Hz by using the inverter. 31 steps
D	M1F M2F	Inverter fan	Because the system is of an air heat exchange type, the fan is operated at 8-step rotation speed by using the inverter.
E	Y1E	Electronic expansion valve (Main: EV1)	While in heating operation, PI control is applied to keep the outlet superheated degree of air heat exchanger constant.
F	Y3E	Electronic expansion valve (Subcooling: EV3)	PI control is applied to keep the outlet superheated degree of subcooling heat exchanger constant.
G	Y2S	Solenoid valve (Hot gas: SVP)	Prevents the low pressure from transient falling.
H	Y3S	Solenoid valve (Unload circuit: SVUL)	Unloading operation of compressor.
M	Y1S	Four-way valve	es the operation mode between cooling and heating.
N	S1NPH	High pressure sensor	Detects high pressure.
O	S1NPL	Low pressure sensor	Detects low pressure.
P	S1PH	High pressure switch (For INV. compressor)	In order to prevent the increase of high pressure when an error occurs, this switch is activated at high pressure of 580 PSI or more to stop the compressor operation.
S	—	Fusible plug	In order to prevent the increase of pressure when abnormal heating is caused by fire or others, the fusible part of the plug is molten at a temperature of 158 to 167°F to release the pressure into the atmosphere.
T	—	Pressure regulating valve 1 (Receiver to discharge pipe)	This valve opens at a pressure of 580 PSI for prevention of pressure increase, thus resulting in no damage of functional parts due to the increase of pressure in transportation or storage.
1	R1T	Thermistor (Outdoor air: Ta)	Detects outdoor air temperature, correct discharge pipe temperature, and others.
2	R2T	Thermistor (INV. discharge pipe: Tdi)	Detects discharge pipe temperature, make the temperature protection control of compressor, and others.
3	R3T	Thermistor (Suction pipe1: Ts1)	Detects suction pipe temperature, keep the suction superheated degree constant in heating operation, and others.
4	R4T	Thermistor (Subcooling heat exchanger gas pipe: Tsh)	Controls of subcooling electronic expansion valve.
5	R5T	Thermistor (Suction pipe2: Ts2)	Calculates internal temperature of compressor.
6	R6T	Thermistor (Heat exchanger deicer: Tb)	Detects liquid pipe temperature of air heat exchanger, determine defrosting operation, and others.
7	R7T	Thermistor (Liquid pipe: Tl)	Detects refrigerant overcharge in check operation, and others.
8	FIN TH	Thermistor (Radiation fin)	• Outdoor unit fan speed control. • Inverter radiation fin temperature control. • Pressure difference control.


R1T
1
R6T
6
Service port
8
FIN TH
Outdoor unit
Heat exchanger
Fan
D
Fan
D
Four way
valve
M
High pressure
sensor
S1NPH
N
Oil
separator
Filter
G
Solenoid
Capillary
Filter
Electronic
expansion valve
E
Capillary
High pressure
S1PH
P
Fusible
plug
S
Pressure
regulating valve
T
R3T
3
R2T
2
Filter
Solenoid
H
Compressor
A
Low pressure
S1NPL
O
Double pipe
heat exchanger
R4T
4
R5T
5
Service port
Capillary
Electronic
expansion valve
F
R7T
7
Accumulator
Stop valve (With service port on field piping side 5/16" flare connection)
* This thermistor is near the electrical components box.
3D065366A

2. Functional Parts Layout

2.1 RZR18 / 24 / 30PVJU
RZQ18 / 24PVJU9
RZQ30PVJU



1P241839F

Part 3 Remote Controller

1. Wired Remote Controller

1.1 Applicable Models

Model Series	FCQ-PA	FHQ-P	FAQ-P	FBQ-P	FTQ-
Wired Remote Controller with Weekly Schedule Timer	BRC1D71				—
Navigation Remote Controller	BRC1E71				

1.2 Names and Functions

1.2.1 BRC1D71

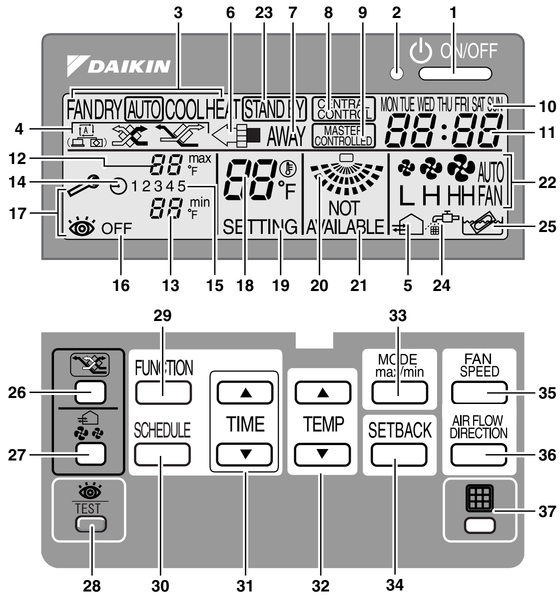


Figure 1

1 ON/OFF BUTTON ON/OFF
Press the ON/OFF button to start or stop the system.

2 OPERATION LAMP
The operation lamp lights up during operation or blinks if an error occurs.

3 OPERATION MODE ICON FANDRY AUTO COOLHEAT
These icons indicate the current operation mode (FAN, DRY, AUTOMATIC, COOLING, HEATING).

4 VENTILATION MODE ICON
These icons indicate the current ventilation mode (Heat Reclaim Ventilator only) (AUTOMATIC, HEAT EXCHANGE, BYPASS).

5 VENTILATION ICON
The ventilation icon appears when the ventilation is adjusted with the ventilation amount button (Heat Reclaim Ventilator only). Simultaneously, the ventilation amount is indicated by the fan speed icon (see 22).

6 AIR CLEANING ICON
This icon indicates that the air cleaning unit (option) is operational.

7 AWAY ICON AWAY
The away icon shows the status of the away function.

ON	AWAY is enabled
BLINKING	AWAY is active
OFF	AWAY is disabled

8 EXTERNAL CONTROL ICON CENTRAL CONTROL
This icon indicates that another controller with higher priority is controlling or disabling your installation.

9 CHANGE-OVER UNDER CENTRALIZED CONTROL ICON MASTER CONTROLLED
This icon indicates that the change-over of the installation is under centralized control assigned to another indoor unit or optional cool/heat selector connected to the outdoor unit (= main remote controller).

10 DAY OF THE WEEK INDICATOR MON TUE WED THU FRI SAT SUN
The day of the week indicator shows the current week day (or the set day when reading or programming the schedule timer).

11 CLOCK DISPLAY 88:88
The clock display indicates the current time (or the action time when reading or programming the schedule timer).

12 MAXIMUM SET TEMPERATURE 88 max °F
The maximum set temperature indicates the maximum set temperature when in limit operation.

13 MINIMUM SET TEMPERATURE 88 min °F
The minimum set temperature indicates the minimum set temperature when in limit operation.

14 SCHEDULE TIMER ICON
This icon indicates that the schedule timer is enabled.

15 ACTION ICONS 1 2 3 4 5
These icons indicate the actions for each day of the schedule timer.

16 OFF ICON OFF
This icon indicates that the OFF action is selected when programming the schedule timer.

17 INSPECTION REQUIRED and
These icons indicate that inspection is required. Consult your installer.

18 SET TEMPERATURE DISPLAY 88 min °F
This indicates the current set temperature of the installation (not shown in LIMIT operation or in FAN or DRY mode).

19 SETTING SETTING
Not used, for service purposes only.

20 AIRFLOW DIRECTION ICON
This icon indicates the airflow direction (only for installations with motorized airflow flaps).

21 NOT AVAILABLE NOT AVAILABLE
NOT AVAILABLE is displayed whenever a non-installed option is addressed or a function is not available.

22 FAN SPEED ICON L H HH AUTO FAN
This icon indicates the set fan speed.

23 DEFROST/HOTSTART MODE ICON STAND BY
This icon indicates that the defrost/hotstart mode is active.

24 AIR FILTER CLEANING TIME ICON
This icon indicates the air filter must be cleaned. Refer to the manual of the indoor unit.

25 ELEMENT CLEANING TIME ICON
This icon indicates the element must be cleaned (Heat Reclaim Ventilator only).

26 VENTILATION MODE BUTTON
The ventilation mode button operates the Heat Reclaim Ventilator; refer to the Heat Reclaim Ventilator manual for more details.

27 VENTILATION AMOUNT BUTTON
This button sets the ventilation amount; refer to the Heat Reclaim Ventilator manual for more details.

28 INSPECTION/TEST OPERATION BUTTON TEST
Not used, for service purposes only.

29 PROGRAMMING BUTTON FUNCTION
This button is a multi-purpose button.
Depending on the previous manipulations of the user, the programming button can have various functions.

30 SCHEDULE TIMER BUTTON
This button enables or disables the schedule timer.

31 TIME ADJUST BUTTON
These buttons are used to adjust the clock or, when in programming mode, to adjust the programmed action time. Both buttons have an auto-repeat function.

32 TEMPERATURE ADJUST BUTTONS
These buttons are used to adjust the current setpoint or, when in programming mode, to adjust the programmed setpoint temperature (step = 1°F). Both buttons are also used to adjust the day of the week.

33 OPERATION CHANGE/MIN-MAX BUTTON
This button is a multi-purpose button. Depending on the previous manipulations of the user, it can have following functions:

1 select the operation mode of the installation (FAN, DRY, AUTOMATIC, COOLING, HEATING)
2 toggle between minimum temperature and maximum temperature when in limit operation

34 SETPOINT/LIMIT BUTTON
This button toggles between setpoint, limit operation or OFF (programming mode only).

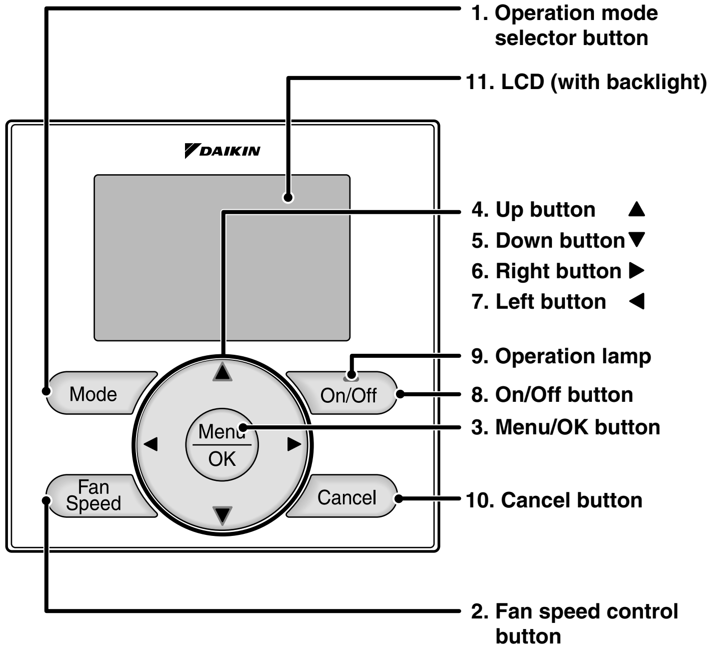
35 FAN SPEED BUTTON
This button toggles between L (Low), H (High), HH (very High), AUTO (Automatic).

36 AIRFLOW DIRECTION ADJUST BUTTON
This button enables to adjust the airflow direction.

37 AIR FILTER CLEANING TIME ICON RESET BUTTON
This button is used to reset the air filter cleaning time icon.

3P166742-1

1.2.2 BRC1E71



Functions other than basic operation items (i.e., On/Off, Operation mode selector, Fan speed control, and temperature settings) are set from the menu screen.

Note:
- Do not install the remote controller in places exposed to direct sunlight, otherwise the LCD will be damaged.
- Do not pull or twist the remote controller cord, otherwise the remote controller may be damaged.
- Do not use objects with sharp ends to press the buttons on the remote controller otherwise damage may result.

1. Operation mode selector button
- Press this button to select the operation mode of your preference.
  ∗Available modes vary with the indoor unit model.

2. Fan speed control button
- Press this button to select the fan speed of your preference.
  ∗Available fan speeds vary with the indoor unit model.

3. Menu/OK button
- Used to indicate the main menu.
- Used to enter the selected item.

4. Up button ▲
- Used to raise the setpoint.
- The item above the current selection will be highlighted.
  (The highlighted items will be scrolled continuously when the button is continuously pressed.)
- Used to change the selected item.

5. Down button ▼
- Used to lower the setpoint.
- The item below the current selection will be highlighted.
  (The highlighted items will be scrolled continuously when the button is continuously pressed.)
- Used to change the selected item.

6. Right button ▶
- Used to highlight the next items on the right-hand side.
- Each screen is scrolled in the right-hand direction.

7. Left button ◀
- Used to highlight the next items on the left-hand side.
- Each screen is scrolled in the left-hand direction.

8. On/Off button
- Press this button and system will start.
- Press this button again to stop the system.

9. Operation lamp (Green)
- This lamp illuminates solid during normal operation.
- This lamp blinks if an error occurs.

10. Cancel button
- Used to return to the previous screen.

11. LCD (with backlight)
- The backlight will be illuminated for approximately 30 seconds by pressing any button.
- If 2 remote controllers are used to control a single indoor unit, only the controller to be accessed first will have backlight functionality.

1.3 MAIN/SUB Setting when Using 2 Remote Controllers

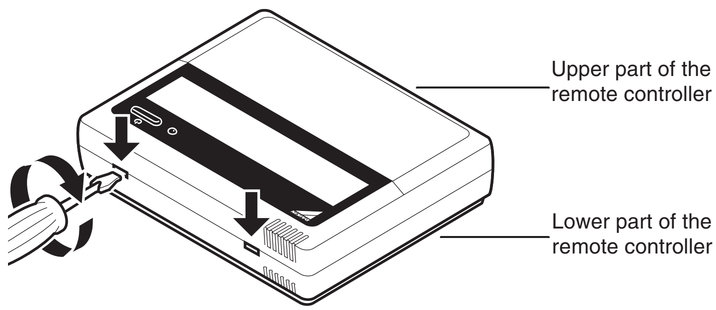
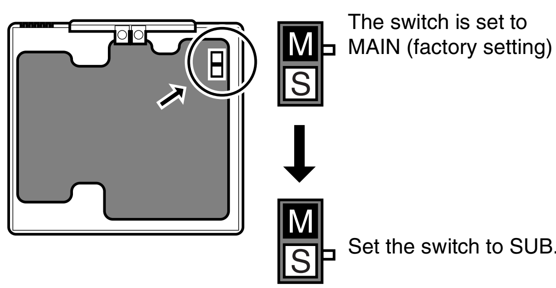
Situation

The MAIN/SUB setting is necessary when 1 indoor unit is controlled by 2 remote controllers. When you use 2 remote controllers (control panel and separate remote controller), set one to MAIN and the other to SUB.

Setting

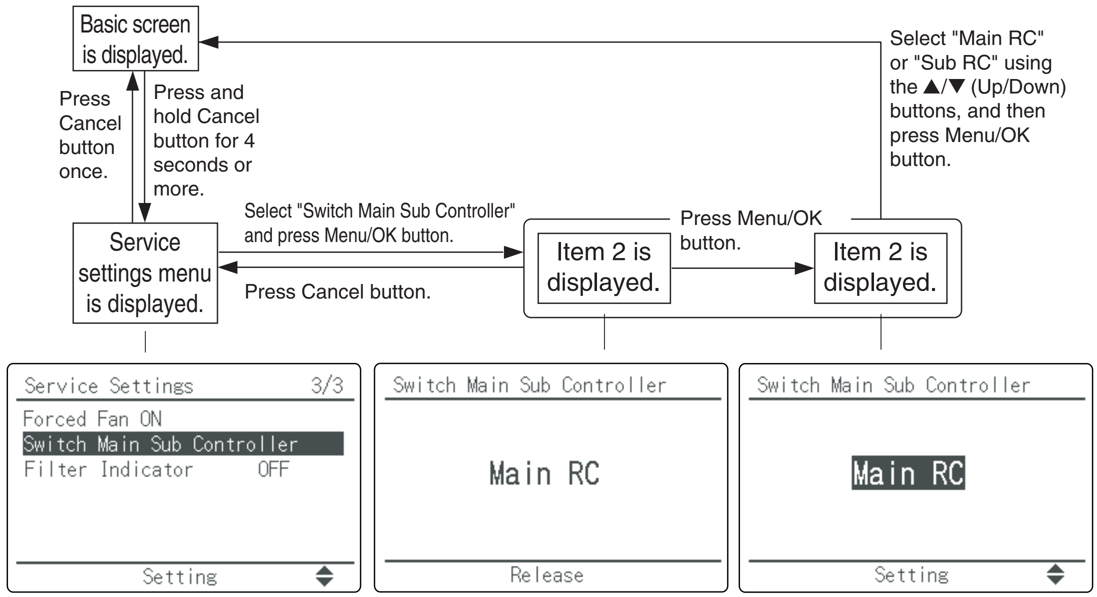
The remote controllers are factory setting to MAIN, so you only have to change one remote controller from MAIN to SUB. To change a remote controller from MAIN to SUB, proceed as follows:

1.3.1 BRC1D71

Step	Action
1	Insert a flat-head screwdriver into the recess between the upper and lower part of the remote controller, as shown in the illustration below. Gently pry off the upper part of the controller, working from the 2 possible positions. 
2	Turn the MAIN/SUB changeover switch on the PCB to “S”. 

1.3.2 BRC1E71

The designation of the main and sub remote controllers can be swapped. Note that this change requires turning the power OFF and then ON again.



1.4 Centralized Control Group No. Setting

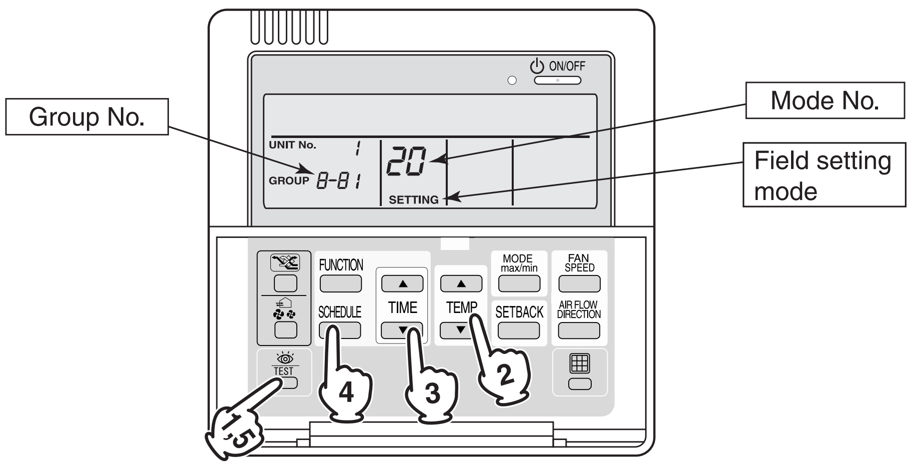
1.4.1 BRC1D71

In order to conduct the centralized remote control using the centralized remote controller and the unified ON/OFF controller, Group No. settings should be made by group using the operating remote controller.

Make Group No. settings for centralized remote control using the operating remote controller.

1. While in normal mode, press and hold the " TEST " switch for a period of 4 seconds or more to set the system to "Field Setting Mode".
2. Select the MODE No. "00" with the " TEMP " button.
3. Use the " TIME " button to select the group No. for each group.
   (Group numbers increase in the order of 1-00, 1-01, ... 1-15, 2-00, ... 4-15.)
4. Press " SCHEDULE " or " FUNCTION " to set the selected group No.
5. Press " TEST " to return to the NORMAL MODE.

BRC1D71



Note:

- For setting group No. of Heat Reclaim Ventilator and wiring adaptor for other air conditioners, etc., refer to the instruction manual attached.

NOTICE

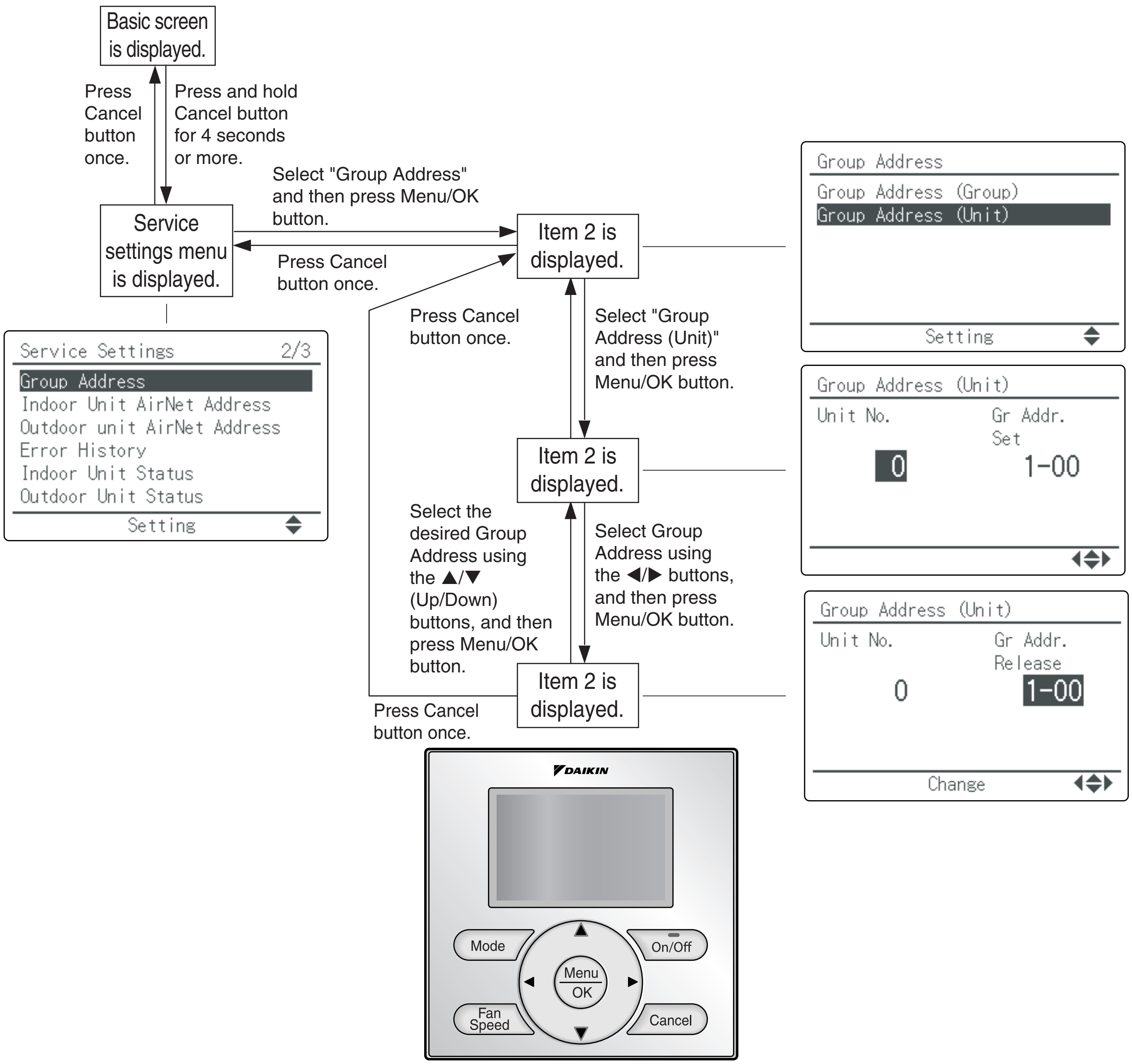
Enter the group No. and installation place of the indoor unit into the attached installation table. Be sure to keep the installation table with the operation manual for maintenance.

1.4.2 BRC1E71

In order to conduct the centralized remote control using the centralized remote controller and the unified ON/OFF controller, Group No. settings should be made by group using the operating remote controller.

Make Group No. settings for centralized remote control using the operating remote controller.

<Group Address (Unit)>



Service settings menu	Item 2
Group Address	Group Address (Group)
	Group Address (Unit)

■ Description

This menu is used to make group address setting for centralized control.

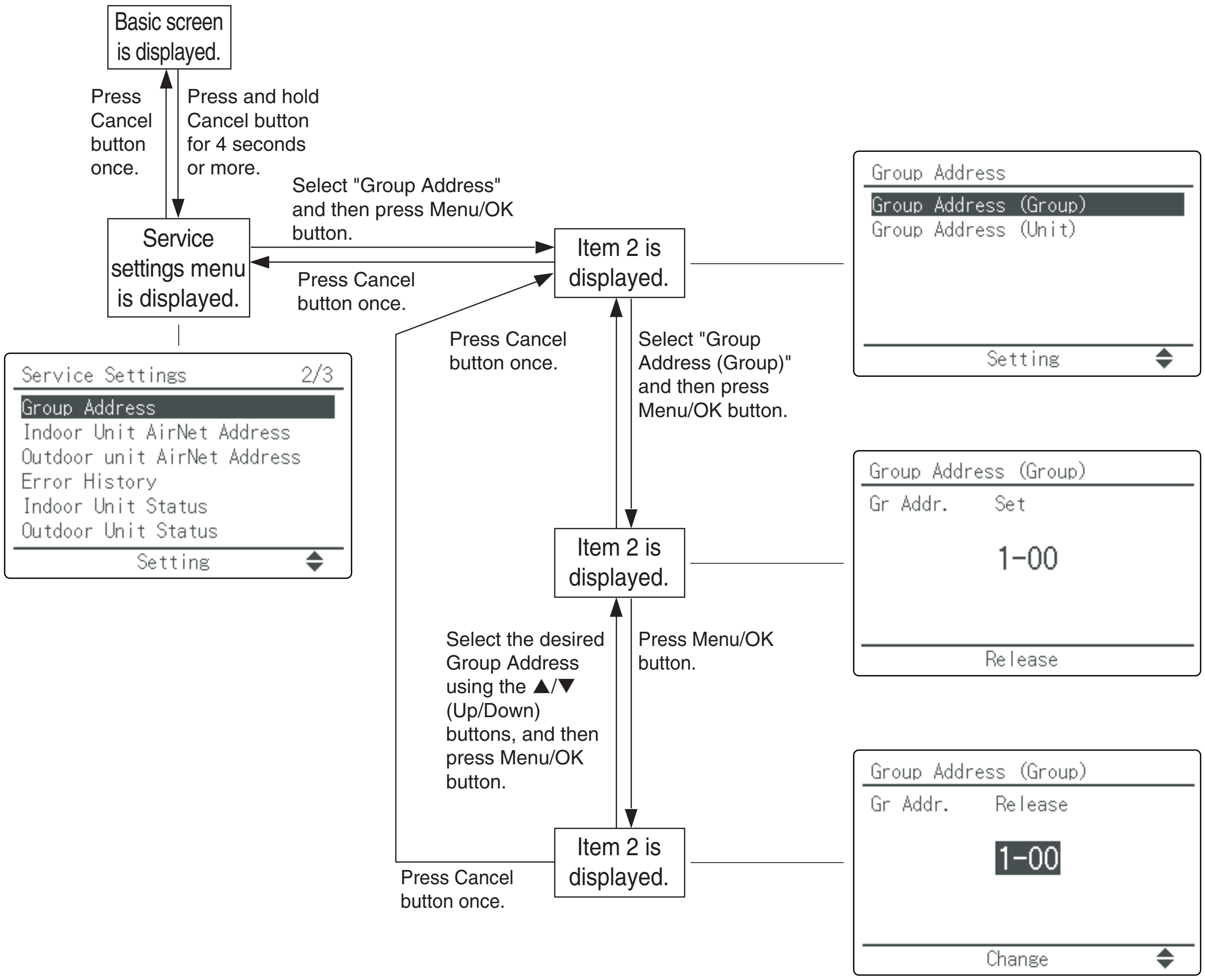
It is also used to make group address setting by indoor unit.

Note: ■ For setting group No. of Heat Reclaim Ventilator and wiring adaptor for other air conditioners, etc., refer to the installation manual attached.

NOTICE

Enter the group No. and installation place of the indoor unit into the attached installation table. Be sure to keep the installation table with the operation manual for maintenance.

<Group Address (Group)>

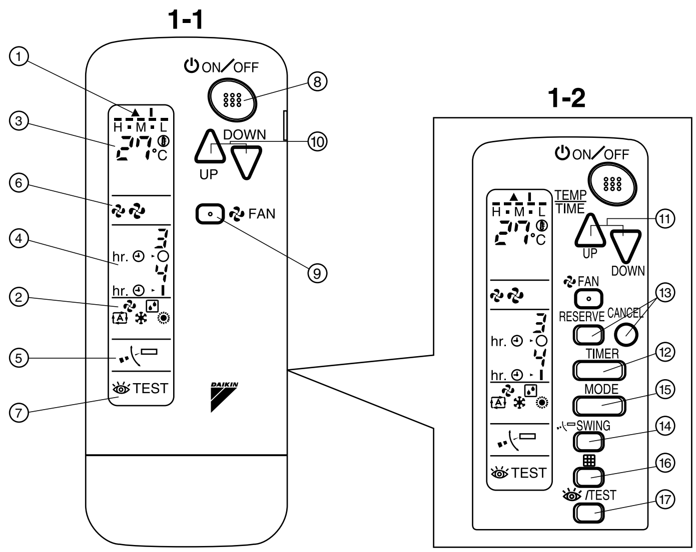


2. Wireless Remote Controller

2.1 Applicable Models

Model Series	FCQ-PA	FHQ-P	FAQ-P	FBQ-P
Remote controller	—	BRC7E83	BRC7EA818	BRC4C82

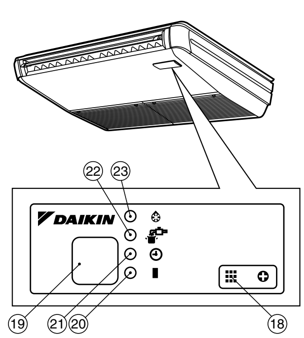
2.2 Names and Functions



3P107422-11J

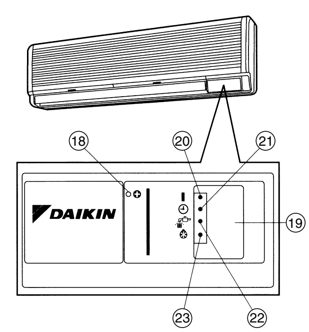
Receiver

FHQ



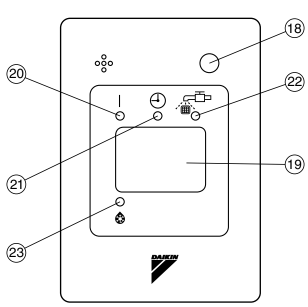
3P107422-8S

FAQ



3P107422-17M

FBQ (separate type)



3P107422-21S

1	**DISPLAY " ▲ " (SIGNAL TRANSMISSION)**
	This lights up when a signal is being transmitted.
2	**DISPLAY " [fan] " " [dry] " " [auto] " " [cool] " " [heat] " (OPERATION MODE)**
	This display shows the current OPERATION MODE. For Cooling Only type, " [auto] " (Auto) and " [heat] " (Heating) are not installed.
3	**DISPLAY " [set temperature] " (SET TEMPERATURE)**
	This display shows the set temperature.
4	**DISPLAY " [programmed time] " (PROGRAMMED TIME)**
	This display shows PROGRAMMED TIME of the system start or stop.
5	**DISPLAY " [airflow flap] " (AIRFLOW FLAP)**
6	**DISPLAY " [fan] " " [fan] " (FAN SPEED)**
	The display shows the set fan speed.
7	**DISPLAY " [inspection] TEST " (INSPECTION/ TEST OPERATION)**
	When the INSPECTION/TEST OPERATION BUTTON is pressed, the display shows the system mode is in.
8	**ON/OFF BUTTON**
	Press the button and the system will start. Press the button again and the system will stop.
9	**FAN SPEED CONTROL BUTTON**
	Press this button to select the fan speed, HIGH or LOW, of your choice.
10	**TEMPERATURE SETTING BUTTON**
	Use this button for SETTING TEMPERATURE (Operates with the front cover of the remote controller closed.)
11	**PROGRAMMING TIMER BUTTON**
	Use this button for programming "START and/or STOP" time. (Operates with the front cover of the remote controller opened.)
12	**TIMER MODE START/STOP BUTTON**
13	**TIMER RESERVE/CANCEL BUTTON**

14	**AIRFLOW DIRECTION ADJUST BUTTON**
15	**OPERATION MODE SELECTOR BUTTON**
	Press this button to select OPERATION MODE.
16	**FILTER SIGN RESET BUTTON**
	Refer to the section of MAINTENANCE in the operation manual attached to the indoor unit.
17	**INSPECTION/TEST OPERATION BUTTON**
	This button is used only by qualified service persons for maintenance purposes.
18	**EMERGENCY OPERATION SWITCH**
	This switch is readily used if the remote controller does not work.
19	**RECEIVER**
	This receives the signals from the remote controller.
20	**OPERATING INDICATOR LAMP (Red)**
	This lamp stays lit while the air conditioner runs. It blinks when the unit is in trouble.
21	**TIMER INDICATOR LAMP (Green)**
	This lamp stays lit while the timer is set.
22	**AIR FILTER CLEANING TIME INDICATOR LAMP (Red)**
	Lights up when it is time to clean the air filter.
23	**DEFROST LAMP (Orange)**
	Lights up when the defrosting operation has started. (For Cooling Only type this lamp does not turn ON.)

NOTES

- For the sake of explanation, all indications are shown on the display in Figure 1 contrary to actual running situations.
- Fig. 1-2 shows the remote controller with the front cover opened.
- If the air filter cleaning time indicator lamp lights up, clean the air filter as explained in the operation manual provided with the indoor unit.
  After cleaning and reinstalling the air filter, press the filter sign reset button on the remote controller. The air filter cleaning time indicator lamp on the receiver will go out.
- The Defrost Lamp will blink when the power is turned ON. This is not an error.

C: 3P107422-11J

2.3 Address and MAIN/SUB Setting

Introduction

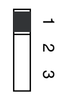
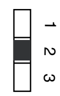
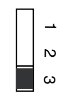
To set the wireless remote controller, you have to set the address for:

- The receiver of the wireless remote controller
- The wireless remote controller.

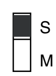
Setting the Address for the Receiver

The address for the receiver of the wireless remote controller is factory setting to 1. To change this setting, proceed as follows:

Set the wireless address switch (SS2) on the PCB according to the table below.

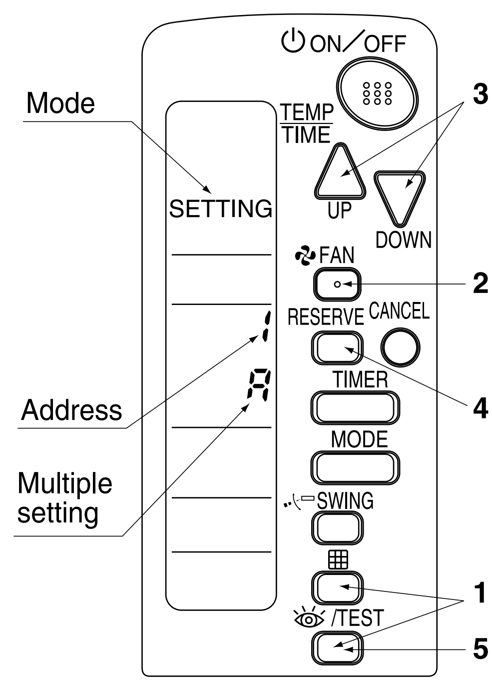
Unit No.	No. 1	No. 2	No. 3
Wireless address switch (SS2)			

When using both a wired and a wireless remote controller for 1 indoor unit, the wired controller should be set to MAIN. Therefore, set the MAIN/SUB switch (SS1) of the receiver to SUB.

MAIN/SUB	MAIN	SUB
MAIN/SUB switch (SS1)		

Setting the Address for the Wireless Remote Controller

The address for the wireless remote controller is factory setting to 1. To change this setting, proceed as follows:



1. Hold down the “⊞” button and the “/TEST” button for at least 4 seconds to get the Field setting mode.
   (Indicated in the display area in the figure at right.)
2. Press the “FAN” button and select a multiple setting (A/b). Each time the button is pressed the display switches between “A” and “b”.
3. Press the “UP” button or “DOWN” button to set the address.

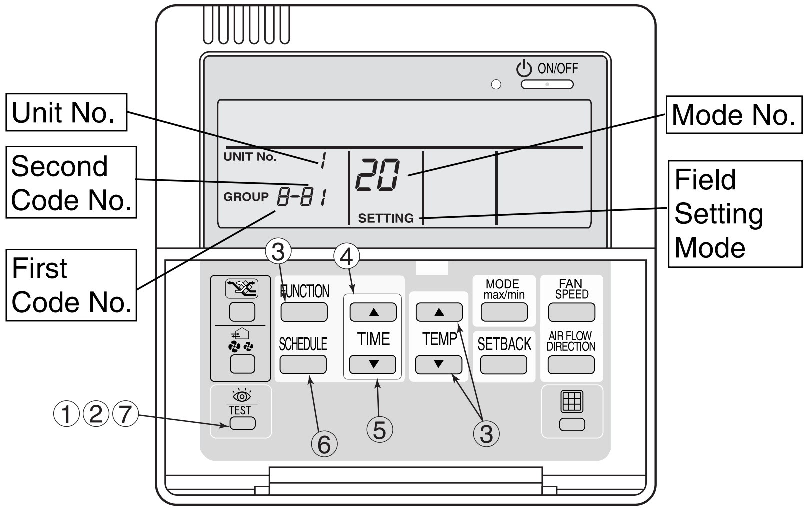
   →1→2→3→4→5→6

   Address can be set from 1 to 6, but set it to 1 ~ 3 and to same address as the receiver. (The receiver does not work with address 4 ~ 6.)
4. Press the “RESERVE” button to enter the setting.
5. Hold down the “/TEST” button for at least 1 second to quit the Field setting mode and return to the normal display.

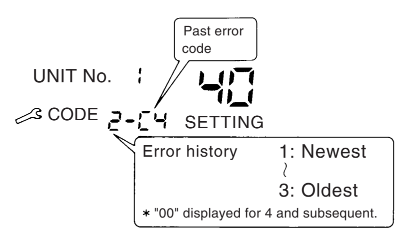
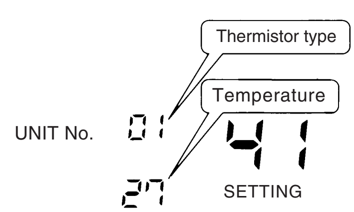
3. Service Mode

3.1 BRC1D71

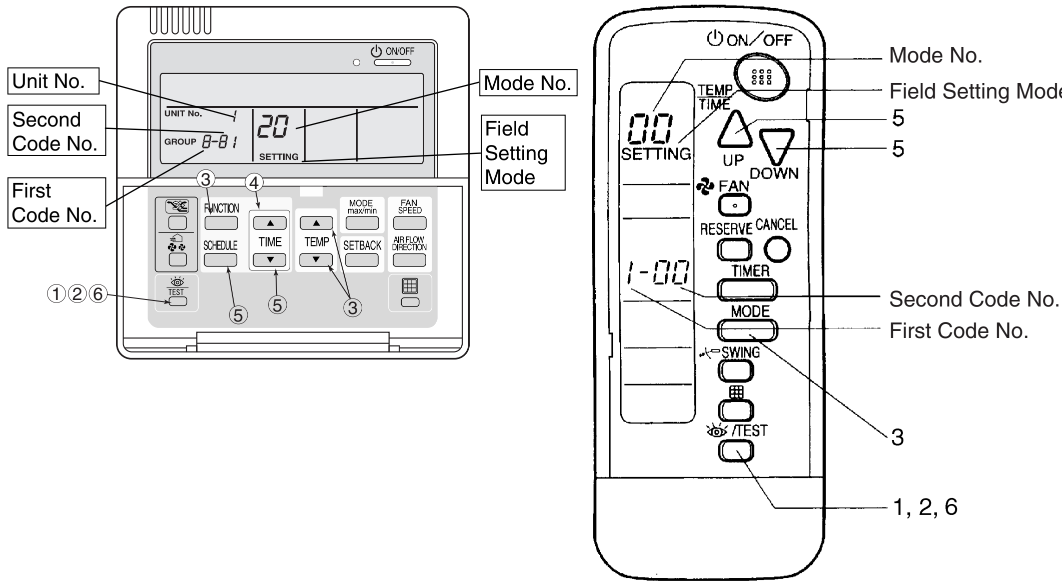
3.1.1 Display Service Data



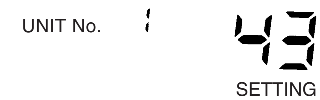
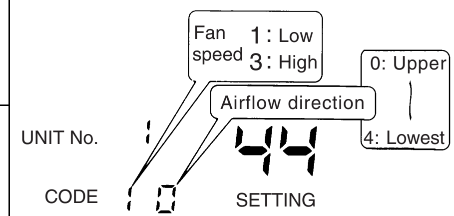
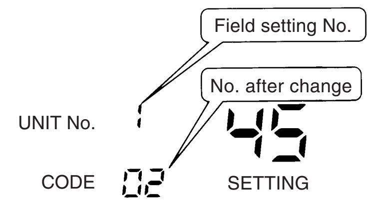
1. Enter the field setting mode.
   Press the INSPECTION / TEST operation button for 4 seconds or more.
2. Enter the service mode.
   After having entered the field setting mode, press the INSPECTION / TEST operation button for 4 seconds or more.
3. Select the mode No.
   Set the desired mode No. with the up/down temperature setting button.
4. Select the unit No.
   Select the indoor unit No. set with the time mode ON/OFF button.
5. Select the desired error history No. or sensor data No. with “ ▲ TIME ” or “ TIME ▼ ” button.
6. Each data displays (Refer to the table below display)
7. Return to the normal operation mode.
   Press the INSPECTION / TEST operation button once.

Mode No.	Function	Content and Operation Method	Example of Remote Controller Display
40	Error History	You can change the history with the programming time up-down button.	
41	Sensor Data Display	Select the display thermistor with the programming time up-down button Display thermistor 0: Remote controller thermistor 1: Suction air thermistor 2: Heat exchanger thermistor	

3.1.2 Service Setting

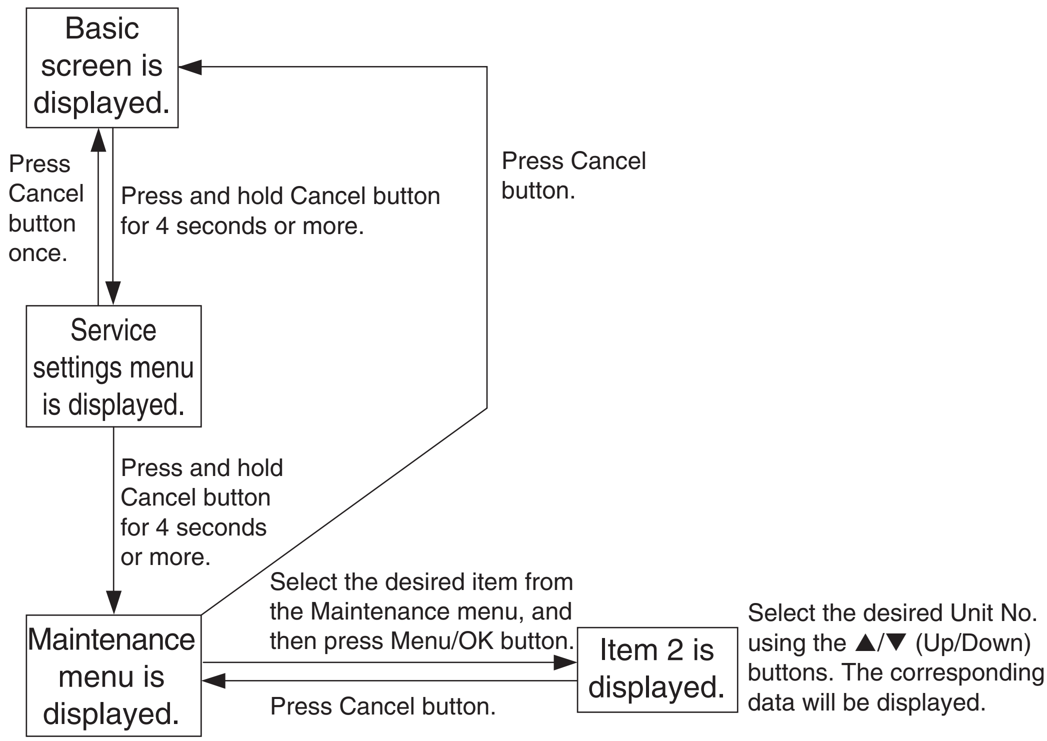


1. Enter the field setting mode.
   Continue to press the INSPECTION / TEST operation button for a minimum of 4 seconds.
2. Enter the maintenance mode.
   After having entered the field setting mode, continue to press the INSPECTION / TEST operation button for a minimum of 4 seconds.
3. Select the mode No.
   Set the desired mode No. with the up/down temperature setting button.
4. Select the unit No.
   Select the indoor unit No. set with the time mode ON/OFF button.
5. Carry out the necessary settings for each mode. (Mode 43 only possible for wireless remote controller)
   - <u>In case of Mode 43</u>
     Press timer ON/OFF button to decide the forced Fan ON.
   - <u>In case of Mode 44</u>
     Set “Fan speed” with fan speed control button and “Airflow direction” with airflow direction adjusting button, then press timer ON/OFF button to decide.
   - <u>In case of Mode 45</u>
     Select the changed unit No. with “ ” or “ ” button, then press timer ON/OFF button to decide.
6. Return to the normal operation mode.
   Press the INSPECTION / TEST operation button 1 time.

Mode No.	Function	Content and Operation Method	Example of Remote Controller Display
43	Forced Fan ON	Turns the fan ON for each unit individually.	
44	Individual Setting	Sets fan speed and airflow direction for each unit individually when using group control. Settings are made using the “airflow direction adjust” and “fan speed adjust” buttons.	
45	Unit No. Change	Changes unit No. Set the unit No. after changing with the programming time up-down button.	

3.2 BRC1E71

Operating the remote controller allows service data to be acquired and various services to be set.



Maintenance Menu	Item 2	Remarks
2.1. Model Name	1. Unit No.	Select the Unit No. you want to check.
	2. Indoor unit	
	3. Outdoor unit	
2.2. Operating Hours	1. Unit No.	Select the Unit No. you want to check.
	2. Indoor unit operating time	All of these are displayed in hours.
	3. Indoor unit fan operation	
	4. Indoor unit energized time	
	5. Outdoor operating time	
	6. Outdoor unit fan 1 operation	
	7. Outdoor unit fan 2 operation	
	8. Outdoor comp. 1 operation	
	9. Outdoor comp. 2 operation	
2.3. Indoor Unit Status	1. Unit No.	Select the Unit No. you want to check.
	2. FAN	Fan tap
	3. FLAP	Swing, fixed
	4. Speed	Fan speed (rpm)
	5. EV	Degree that electronic expansion valve is open (pls)
	6. MP	Drain pump ON/OFF
	7. EH	Electric heater ON/OFF
	8. Hu	Humidifier ON/OFF
	9. TBF	Anti-freezing control ON/OFF

Maintenance Menu	Item 2	Remarks
2.3. Indoor Unit Status	10.FLOAT	
	11.T1/T2	
	12.Unit No.	Select the Unit No. you want to check.
	13.Th1	Suction air thermistor
	14.Th2	Heat exchanger thermistor
	15.Th3	—
	16.Th4	Discharge air thermistor
	17.Th5	—
	18.Th6	—
2.4. Outdoor Unit Status	1. Unit No.	Select the Unit No. you want to check.
	2. FAN step	Fan tap
	3. COMP	Compressor power supply frequency (Hz)
	4. EV1	Degree that electronic expansion valve is open (pls)
	5. SV1	Solenoid valve ON/OFF
	6. Th1	Outdoor air thermistor
	7. Th2	Heat exchanger thermistor
	8. Th3	Discharge pipe thermistor
	9. Th4	Heat exchanger deicer thermistor
	10.Th5	Heat exchanger gas pipe thermistor
	11.Th6	Liquid pipe thermistor
2.5. Forced Defrost	1. Forced defrost ON	Enables the forced defrost operation.
	2. Forced defrost OFF	Disables the forced defrost operation.
2.6. Error Display	1. Display Warning ON	Displays a warning on the screen if an error occurs.
	2. Display Warning OFF	No warning is displayed.
	3. Display Error ON	Displays the error on the screen.
	4. Display Error OFF	Displays neither errors nor warnings.
2.7. Swap Unit No.	1. Current Unit No.	A unit No. can be transferred to another.
	2. Transfer Unit No.	
2.8. Addressed Sensor Value	○ Unit No.: 0 - 15	Select the Unit No. you want to check.
	○ Code 00: 01: 02: 03: 04: 05: 06: 07: 08: 09:	 Remote controller thermistor (°F) Suction air thermistor (°F) Heat exchanger liquid pipe thermistor (°F) Heat exchanger gas pipe thermistor (°F) Indoor unit address No. Outdoor unit address No. BS unit address No. Zone control address No. Cooling/Heating batch address No. Demand/low-noise address No.
	○ Data	The corresponding data will be displayed, based on the Unit No. and Code selected.

4. Inspection Mode

Normal display (No display)

Unit 0
Error code L 0
Inspection

Error code blinks when an error occurs.

INSPECTION/TEST operation — Press the button.

Unit 0
Error code L 0
Inspection

Inspection mode

INSPECTION/TEST operation — Press the button.

0 7 1
F C J

Indoor unit model code display

0 7 1...Capacity code
F...Indoor unit system code
C...Indoor unit type code
J...Progression code

Example of capacity code display

Model	Display
FCQ18	056
FCQ24	071
FHQ30	090

Model	Display
FHQ18/FAQ18	056
FHQ24/FAQ24	071
FHQ30	090
FBQ36	112

Indoor unit system code

Display	System classification
1	(VAV indoor unit)
2	Outdoor air processing unit
F	Standard indoor unit
H	Ceiling suspended cassette

Indoor unit type code

Display	Type	Model
A	Wall mounted	FAQ
C	Multi flow	FCQ
H	Ceiling suspended	FHQ
J	Built-in	FBQ

For FTQ

Indoor unit system code	E
Indoor unit type code	9
Progression code	1

INSPECTION/TEST operation — Press the button.

– – –
A A 1

Outdoor unit model code display

Outdoor model code

Display	Type	Model
A 8 F	Split system	RZQ-P, RZR-P

INSPECTION/TEST operation — Press the button.

Test operation

Test operation mode

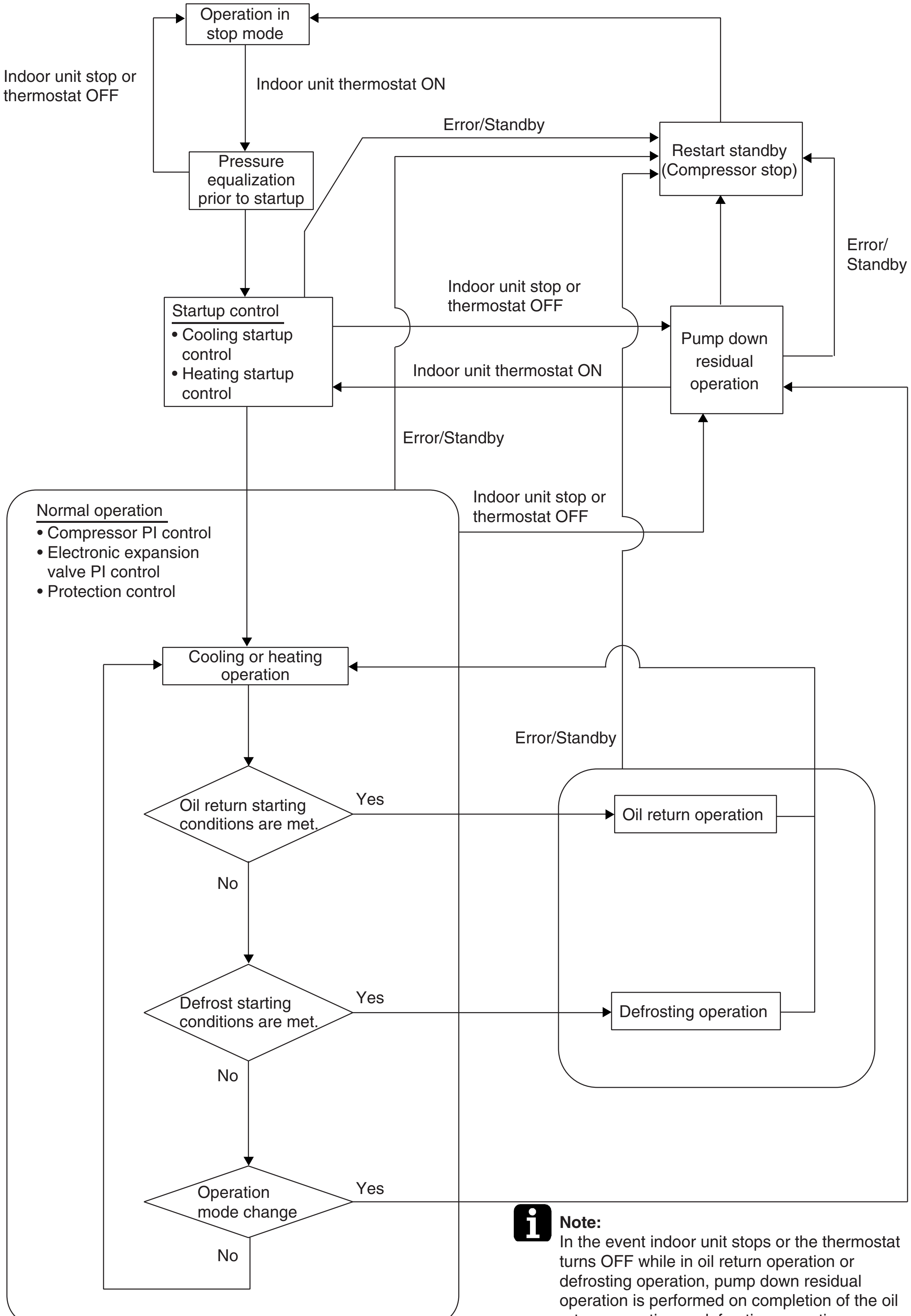
INSPECTION/TEST operation — Press the button.

Note: Inspection mode is not available for BRC1E71.

Part 4
Function and Control

1. Function General

1.1 Operation Mode



Note:
In the event indoor unit stops or the thermostat turns OFF while in oil return operation or defrosting operation, pump down residual operation is performed on completion of the oil return operation or defrosting operation.

2. Basic Control

2.1 Normal Operation

■ **Cooling**

Parts Name	Symbol	Electric Symbol		Operation		Remarks
		RZR18/24/30P RZQ18/24/30P	RZR36/42P RZQ36/42P	RZR18/24/30P RZQ18/24/30P	RZR36/42P RZQ36/42P	
Compressor (INV.)	—	M1C	M1C	Compressor PI control	Compressor PI control	Used for high pressure protection control, low pressure protection control, discharge pipe temperature protection control, and compressor operating frequency upper limit control with inverter protection control.
Outdoor unit fan	—	M1F	M1F M2F	Cooling fan control	Cooling fan control	—
Four-way valve	20S1	Y1S	Y1S	OFF	OFF	—
Electronic expansion valve (Main)	EV1	Y1E	Y1E	1400 pls	480 pls	—
Electronic expansion valve (Subcooling)	EV3	—	Y3E	—	PI control	—
Solenoid valve (Hot gas)	SVP	Y2S	Y2S	OFF	OFF	This valve turns ON with low pressure protection control.
Solenoid valve (Receiver gas discharging)	SVG	Y3S	—	OFF	—	—

■ **Heating**

Parts Name	Symbol	Electric Symbol		Operation		Remarks
		RZQ18/24/30P	RZQ36/42P	RZQ18/24/30P	RZQ36/42P	
Compressor (INV.)	—	M1C	M1C	Compressor PI control	Compressor PI control	Used for high pressure protection control, low pressure protection control, discharge pipe temperature protection control, and compressor operating frequency upper limit control with inverter protection control.
Outdoor unit fan	—	M1F	M1F M2F	STEP 8	Step 7 or 8	The fan step changes to STEP 1 with high pressure > 454 psi.
Four-way valve	20S1	Y1S	Y1S	ON	ON	—
Electronic expansion valve (Main)	EV1	Y1E	Y1E	PI control	PI control	—
Electronic expansion valve (Subcooling)	EV3	—	Y3E	—	PI control	—
Solenoid valve (Hot gas)	SVP	Y2S	Y2S	OFF	OFF	This valve turns ON with low pressure protection control.
Solenoid valve (Receiver gas discharging)	SVG	Y3S	—	OFF	—	—

∗ Heating operation is not functional at an outdoor air temperature of 82°FDB or more.

2.2 Compressor PI Control

Compressor PI Control

Te: Low pressure equivalent saturation temperature (°F)
TeS: Target Te value
(Varies depending on Te setting, operating frequency, etc.)
Tc: High pressure equivalent saturation temperature (°F)
TcS: Target Tc value
(Varies depending on Tc setting, operating frequency, etc.)

Carries out the compressor capacity PI control to maintain Te at constant during cooling operation and Tc at constant during heating operation to ensure stable unit performance.

[Cooling]

Controls compressor capacity to adjust Te to achieve target value (TeS).

Te setting (Set in Set-up mode 2)

L	M (Normal) (factory setting)	H
37.5	43	48

[Heating]

Controls compressor capacity to adjust Tc to achieve target value (TcS).

Tc setting

L	M (Normal) (factory setting)	H
109.5	115	120

RZR18/24/30P, RZQ18/24/30P

STEP	Inverter
1	52Hz
2	57Hz
3	62Hz
4	68Hz
5	74Hz
6	81Hz
7	88Hz
8	96Hz
9	104Hz
10	110Hz
11	116Hz
12	124Hz
13	133Hz
14	143Hz
15	158Hz
16	165Hz
17	177Hz

* Compressors may operate in a pattern other than those listed in above tables subject to the operating conditions.

RZR36/42P, RZQ36/42P

STn	INV. (Full-load)	INV. (Unload)
1		36.0Hz
2		39.0Hz
3		43.0Hz
4		47.0Hz
5		52.0Hz
6	52.0Hz	57.0Hz
7	57.0Hz	64.0Hz
8	62.0Hz	71.0Hz
9	68.0Hz	78.0Hz
10	74.0Hz	

STn	INV. (Full-load)	INV. (Unload)
11	80.0Hz	
12	86.0Hz	
13	92.0Hz	
14	98.0Hz	
15	104.0Hz	
16	110.0Hz	
17	116.0Hz	
18	122.0Hz	
19	128.0Hz	
20	134.0Hz	

STn	INV. (Full-load)	INV. (Unload)
21	140.0Hz	
22	146.0Hz	
23	152.0Hz	
24	158.0Hz	
25	164.0Hz	
26	170.0Hz	
27	175.0Hz	
28	180.0Hz	
29	185.0Hz	
30	190.0Hz	
31	195.0Hz	

Note:

∗ Compressors may operate in a pattern other than those listed in above tables subject to the operating conditions. Selection of full load operation to/from unload operation is made with the unload circuit solenoid valve (Y3S = SVUL). The full load operation is performed with the SVUL set to OFF, while the unload operation is performed with the SVUL set to ON.

2.3 Electronic Expansion Valve PI Control

Main Electronic Expansion Valve EV1 Control

Carries out the electronic expansion valve (Y1E) PI control to maintain the evaporator outlet superheated degree (SH) at constant during heating operation to make maximum use of the outdoor unit heat exchanger (evaporator).

SH = Ts1 - Te

SH: Evaporator outlet superheated degree
Ts1: Suction pipe temperature detected by thermistor
Te: Low pressure equivalent saturation temperature

The optimum initial value of the evaporator outlet superheated degree is 9°F, but varies depending on the discharge pipe superheated degree of inverter compressor.

Subcooling Electronic Expansion Valve EV3 Control

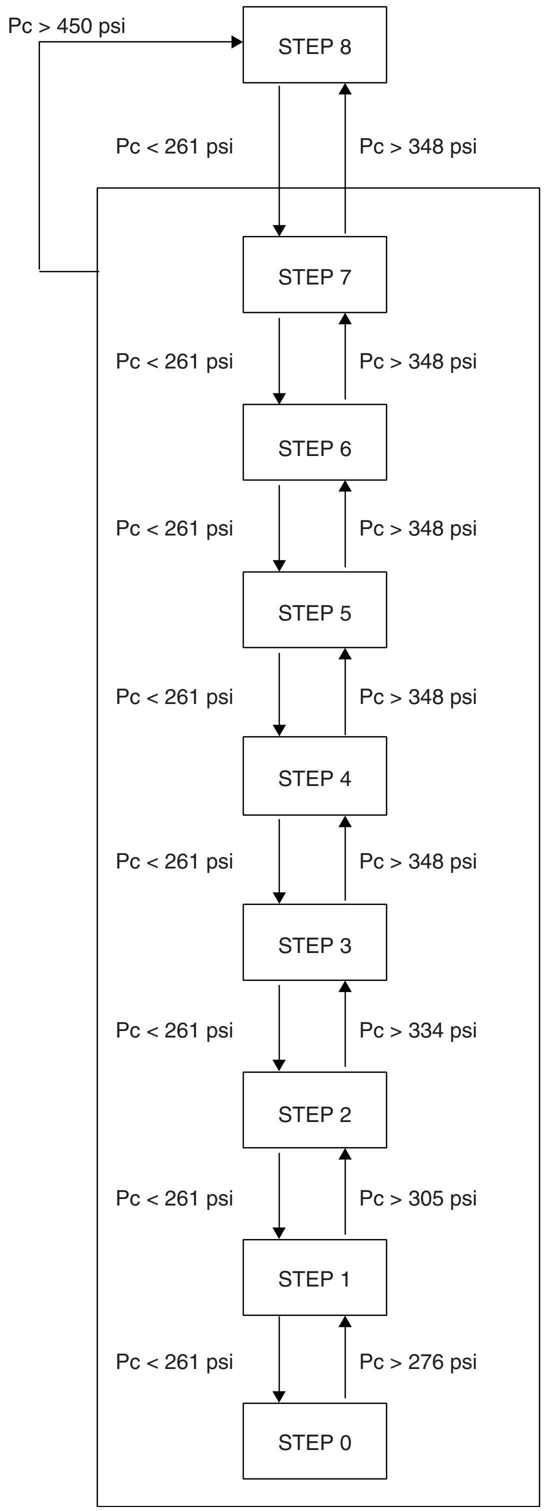
Makes PI control of the electronic expansion valve (Y3E) to keep the superheated degree (SH) of the outlet gas pipe on the evaporator side for the full use of the subcooling heat exchanger.

SH = Tsh - Te

SH: Evaporator outlet superheated degree
Tsh: Suction pipe temperature detected by thermistor
Te: Low pressure equivalent saturation temperature

2.4 Cooling Operation Fan Control

In cooling operation with low outdoor air temperature, this control is used to provide the adequate amount of circulation air with liquid pressure secured by high pressure control using outdoor unit fan.



Pc: High pressure sensor detection value

Fan Steps

Cooling	M1F
STEP 0	0 rpm
STEP 1	200 rpm
STEP 2	250 rpm
STEP 3	300 rpm
STEP 4	360 rpm
STEP 5	430 rpm
STEP 6	515 rpm
STEP 7	620 rpm
STEP 8	830 rpm

3. Special Control

3.1 Startup Control

On activation, following control is performed to lighten load of the compressor by back liquid and the like. Also, the position of the four-way valve is defined.

Pc: High-pressure sensor detection value

Pe: Low-pressure sensor detection value

3.1.1 Startup Control in Cooling

Parts Name	Symbol	Electric Symbol		Operation	Remarks
		RZR18/24/32P RZQ18/24/30P	RZR36/42P RZQ36/42P		
Compressor (INV.)	—	M1C	M1C	Differential pressure control	Compressor operating frequency increases by 2 step / 20 seconds until Pc – Pe > 58 psi.
Outdoor unit fan	—	M1F	M1F M2F	High pressure control	Initial fan speed is set to STEP 0. 1-step increase with Pc > 305 psi 1-step decrease with Pc < 261 psi
Four-way valve	20S1	Y1S	Y1S	OFF	—
Electronic expansion valve (Main)	EV1	Y1E	Y1E	1400 pls	—
Solenoid valve (Hot gas)	SVP	Y2S	Y2S	ON	—
Solenoid valve (Receiver gas discharging)	SVG	Y3S	—	OFF	—
Ending conditions				OR (• 230 seconds & (• Pc – Pe > 58 psi • 45 seconds))	

3.1.2 Startup Control in Heating

Parts Name	Symbol	Electric Symbol		Operation	Remarks
		RZR18/24/32P RZQ18/24/30P	RZR36/42P RZQ36/42P		
Compressor (INV.)	—	M1C	M1C	Differential pressure control	Compressor operating frequency increases by 2 step / 20 seconds until Pc – Pe > 58 psi
Outdoor unit fan	—	M1F	M1F M2F	STEP 8	—
Four-way valve	20S1	Y1S	Y1S	ON	—
Electronic expansion valve (Main)	EV1	Y1E	Y1E	180 pls	—
Solenoid valve (Hot gas)	SVP	Y2S	Y2S	ON	—
Solenoid valve (Receiver gas discharging)	SVG	Y3S	—	OFF	—
Ending conditions				OR (• 145 seconds & (• Pc – Pe > 58 psi • 15 seconds))	

3.2 Oil Return Operation

Oil flown from the compressor to the side of system is collected by oil return operation, in case of that oil in the compressor runs down.

3.2.1 Oil Return Operation in Cooling

Tc: High pressure equivalent saturation temperature
Te: Low pressure equivalent saturation temperature
Ts: Suction pipe temperature detected by thermistor

[Conditions to start]

The cooling oil return operation is started referring following conditions.

- Integrated amount of displaced oil
- Timer
  (After the power is turned ON, integrated operating-time is 2 hours and subsequently every 8 hours.)
  In addition, integrated amount of displaced oil is derived from Tc, Te, and the compressor load.

Parts Name	Symbol	Electric Symbol		Oil return preparation operation	Oil return operation	Post-oil-return operation
		RZR18/24/32P RZQ18/24/30P	RZR36/42P RZQ36/42P			
Compressor (INV.)	—	M1C	M1C	Upper limit control	124 Hz	124 Hz
Outdoor unit fan	—	M1F	M1F M2F	Fan control	Fan control	Fan control
Four-way valve	20S1	Y1S	Y1S	OFF	OFF	OFF
Electronic expansion valve (Main)	EV1	Y1E	Y1E	1400 pls	1400 pls	1400 pls
Solenoid valve (Hot gas)	SVP	Y2S	Y2S	OFF	ON	ON
Solenoid valve (Receiver gas discharging)	SVG	Y3S	—	OFF	OFF	OFF
Ending conditions				20 seconds	OR (• 6 minutes • Ts – Te < 9°F)	3 minutes

Indoor unit actuator		Cooling oil return operation
Fan	Thermostat ON unit	Set air volume
	Stopping unit	OFF
	Thermostat OFF unit	OFF
Electronic expansion valve	Thermostat ON unit	Normal opening
	Stopping unit	200 pls
	Thermostat OFF unit	200 pls

3.2.2 Oil Return Operation in Heating

Pc: High-pressure sensor detection value
Pe: Low-pressure sensor detection value
Tc: High-pressure equivalent saturation temperature
Te: Low-pressure equivalent saturation temperature
Ts: Suction pipe temperature detected by thermistor

[Conditions to start]

The heating oil return operation is started referring following conditions.

- Integrated amount of displaced oil
- Timer
  (After the power is turned ON, integrated operating-time is 2 hours and subsequently every 8 hours.)
  In addition, integrated amount of displaced oil is derived from Tc, Te, and the compressor load.

Parts Name	Symbol	Electric Symbol		Oil return preparation operation	Oil return operation	Post-oil-return operation
		RZR18/24/32P RZQ18/24/30P	RZR36/42P RZQ36/42P			
Compressor (INV.)	—	M1C	M1C	Upper limit control	124 Hz	2-step increase from 52 Hz to (Pc – Pe > 58 psi) time
Outdoor unit fan	—	M1F	M1F M2F	STEP 8	OFF	STEP 8
Four-way valve	20S1	Y1S	Y1S	ON	OFF	ON
Electronic expansion valve (Main)	EV1	Y1E	Y1E	SH control	1400 pls	200~400 pls
Solenoid valve (Hot gas)	SVP	Y2S	Y2S	OFF	ON	ON
Solenoid valve (Receiver gas discharging)	SVG	Y3S	—	ON	ON	OFF
Ending conditions				130 seconds	OR (• 6 minutes • Ts – Te < 9°F)	OR (• 160 seconds • Pc – Pe > 58 psi)

∗ From the preparing oil return operation to the oil return operation, and from the oil return operation to the operation after oil return, the compressor stops for 1 minute to reduce noise on changing of the four-way valve.

Indoor unit actuator		Heating oil return operation
Fan	Thermostat ON unit	OFF
	Stopping unit	OFF
	Thermostat OFF unit	OFF
Electronic expansion valve	Thermostat ON unit	500 pls
	Stopping unit	500 pls
	Thermostat OFF unit	500 pls

3.3 Defrosting Operation

Pc: High-pressure sensor detection value
Pe: Low-pressure sensor detection value
Tc: High-pressure equivalent saturation temperature
Te: Suction pipe equivalent saturation temperature
The defrost operation is performed to solve frost on the outdoor unit heat exchanger when heating, and the heating capacity is recovered.

[Conditions to start]

The defrost operation is started referring following conditions.

- Outdoor unit heat exchanger heat transfer co-efficiency
- Temperature of heat exchanger (Tb)
- Timer (2 hours at the minimum)
  In addition, outdoor unit heat exchanger co-efficiency is derived from Tc, Te, and the compressor load.

Parts Name	Symbol	Electric Symbol		Defrost preparation operation	Defrost operation	Post Defrost operation
		RZR18/24/32P RZQ18/24/30P	RZR36/42P RZQ36/42P			
Compressor (INV.)	—	M1C	M1C	52 Hz	177 Hz	2-step increase from 52 Hz to (Pc – Pe > 58 psi) every 20 seconds
Outdoor unit fan	—	M1F	M1F M2F	STEP 8	OFF	STEP 8
Four-way valve	20S1	Y1S	Y1S	ON	OFF	ON
Electronic expansion valve (Main)	EV1	Y1E	Y1E	SH control	1400 pls	200~400 pls
Solenoid valve (Hot gas)	SVP	Y2S	Y2S	OFF	ON	ON
Solenoid valve (Receiver gas discharging)	SVG	Y3S	—	ON	ON	OFF
Ending conditions				130 seconds	OR (• 15 minutes • Tb > 51.8°F)	OR (• 160 seconds • Pc – Pe > 58 psi)

∗ From the preparing operation to the defrost operation, and from the defrost operation to the operation after defrost, the compressor stops for 1 minute to reduce noise on changing of the four-way valve.

Indoor unit actuator		During defrost
Fan	Thermostat ON unit	OFF
	Stopping unit	OFF
	Thermostat OFF unit	OFF
Electronic expansion valve	Thermostat ON unit	500 pls
	Stopping unit	500 pls
	Thermostat OFF unit	500 pls

3.4 Pump Down Residual Operation

Pe: Low pressure sensor detection value
Td: Discharge pipe temperature
When activating compressor, if the liquid refrigerant remains in the heat-exchanger, the liquid enters into the compressor and dilutes oil therein resulting in decrease of lubricity.
Therefore, the pump down residual operation is performed to collect the refrigerant in the heat-exchanger when the compressor is down.

3.4.1 Pump Down Residual Operation in Cooling

Parts Name	Symbol	Electric Symbol		Master unit operation
		RZR18/24/32P RZQ18/24/30P	RZR36/42P RZQ36/42P	
Compressor (INV.)	—	M1C	M1C	124 Hz
Outdoor unit fan	—	M1F	M1F M2F	Fan control
Four way valve	20S1	Y1S	Y1S	OFF
Electronic expansion valve (Main)	EV1	Y1E	Y1E	2000 pls
Solenoid valve (Hot gas)	SVP	Y2S	Y2S	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y3S	—	ON → OFF
Ending conditions				OR (• 30 seconds • Pe < 73 psi • Td > 230°F)

3.4.2 Pump Down Residual Operation in Heating

Parts Name	Symbol	Electric Symbol		Master unit operation
		RZR18/24/32P RZQ18/24/30P	RZR36/42P RZQ36/42P	
Compressor (INV.)	—	M1C	M1C	124 Hz
Outdoor unit fan	—	M1F	M1F M2F	STEP 8
Four way valve	20S1	Y1S	Y1S	ON
Electronic expansion valve (Main)	EV1	Y1E	Y1E	0 pls
Solenoid valve (Hot gas)	SVP	Y2S	Y2S	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y3S	—	ON → OFF
Ending conditions				OR (• 3 minutes • Pe < 36 psi • Td > 230°F)

3.5 Restart Standby

Ta: Outdoor air temperature

Restart is stood by force to prevent frequent power-ON/OFF and to equalize pressure in the refrigerant system.

Parts Name	Symbol	Electric Symbol		Operation	Remarks
		RZR18/24/32P RZQ18/24/30P	RZR36/42P RZQ36/42P		
Compressor (INV.)	—	M1C	M1C	OFF	—
Outdoor unit fan	—	M1F	M1F M2F	Ta > 86°F: STEP 4 Ta ≤ 86°F: OFF	—
Four-way valve	20S1	Y1S	Y1S	Keep former condition.	—
Electronic expansion valve (Main)	EV1	Y1E	Y1E	0 pls	—
Solenoid valve (Hot gas)	SVP	Y2S	Y2S	ON	—
Solenoid valve (Receiver gas discharging)	SVG	Y3S	—	OFF	—
Ending conditions				5 minutes	—

3.6 Stopping Operation

Operation of the actuator when the system is down, is cleared up.

3.6.1 When System is in Stop Mode

Parts Name	Symbol	Electric Symbol		Operation
		RZR18/24/32P RZQ18/24/30P	RZR36/42P RZQ36/42P	
Compressor (INV.)	—	M1C	M1C	OFF
Outdoor unit fan	—	M1F	M1F M2F	OFF
Four-way valve	20S1	Y1S	Y1S	Keep former condition.
Electronic expansion valve (Main)	EV1	Y1E	Y1E	0 pls
Solenoid valve (Hot gas)	SVP	Y2S	Y2S	OFF
Solenoid valve (Receiver gas discharging)	SVG	Y3S	—	OFF
Ending conditions				Indoor unit thermostat is turned ON.

3.7 Pressure Equalization Prior to Startup

Ta: Outdoor air temperature
Pc: High-pressure sensor detection value
Pe: Low-pressure sensor detection value
Before activating the compressor, the activation load is lightened by equalization across the compressor. In addition, inverters turn ON electricity and capacitors are charged.

Parts Name	Symbol	Electric Symbol		Operation	Remarks
		RZR18/24/32P RZQ18/24/30P	RZR36/42P RZQ36/42P		
Compressor (INV.)	—	M1C	M1C	OFF	—
Outdoor unit fan	—	M1F	M1F M2F	Cooling: OFF Heating: Ta > 78.8°F; STEP 8, Ta ≤ 78.8°F; OFF	—
Four-way valve	20S1	Y1S	Y1S	Keep former condition.	—
Electronic expansion valve (Main)	EV1	Y1E	Y1E	0 pls	—
Solenoid valve (Hot gas)	SVP	Y2S	Y2S	ON	—
Solenoid valve (Receiver gas discharging)	SVG	Y3S	—	OFF	—
Ending conditions				OR (• 3 minutes • Pc – Pe < 29 psi	—

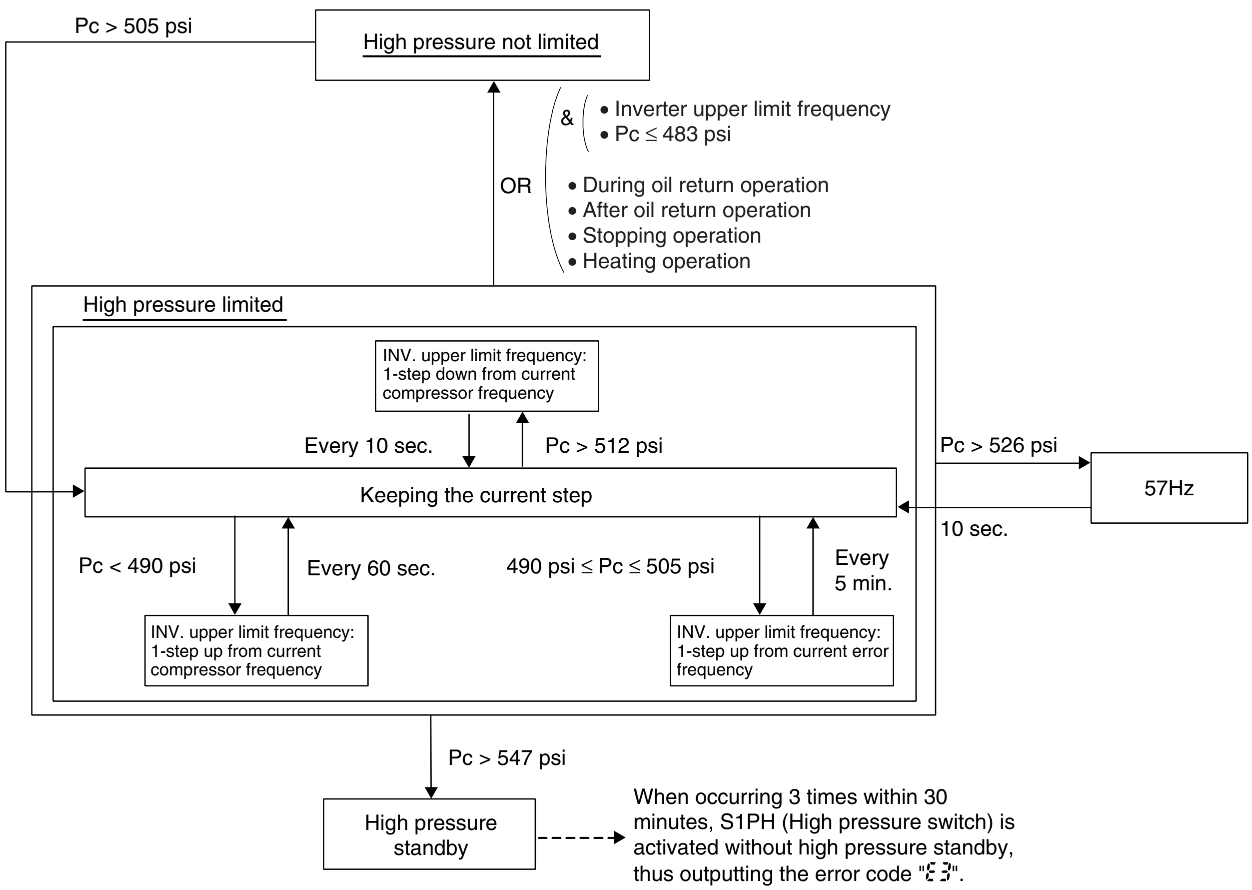
4. Protection Control

4.1 High Pressure Protection Control

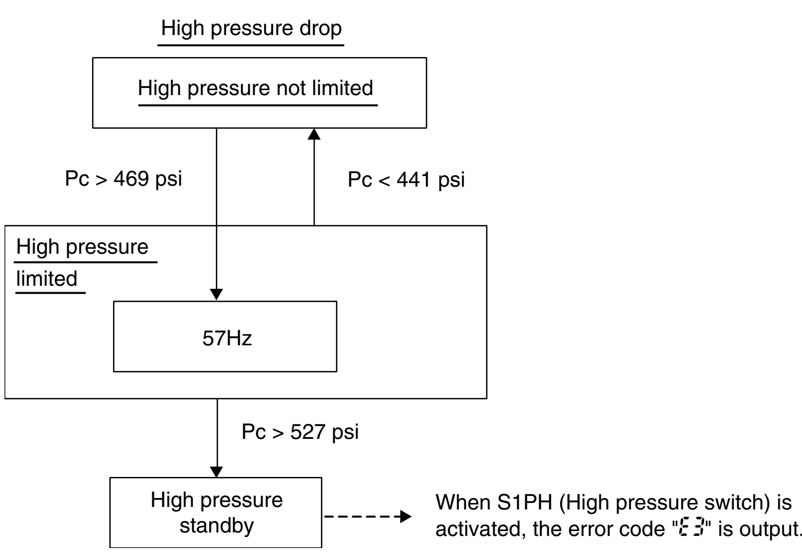
Pc: High-pressure sensor detection value

This high pressure protection control is used to prevent the activation of protection devices due to abnormal increase of high pressure and to protect compressors against the transient increase of high pressure.

[Cooling]



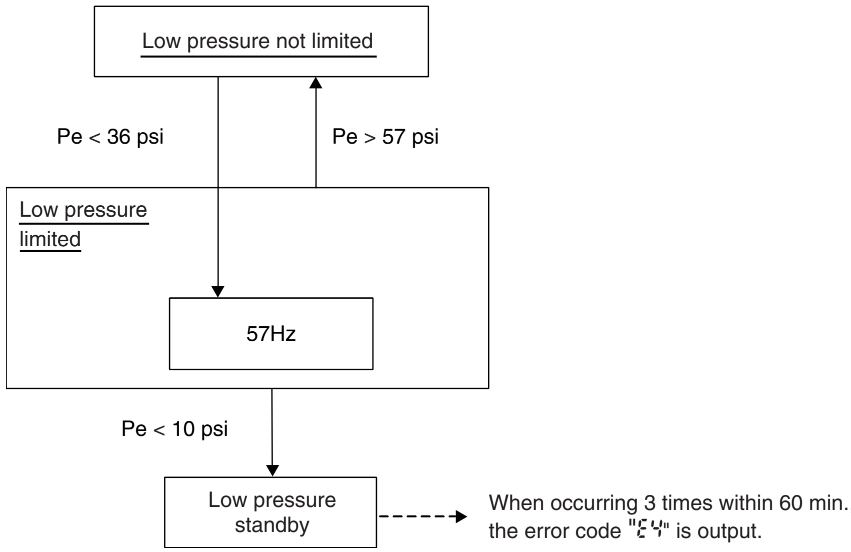
[Heating]



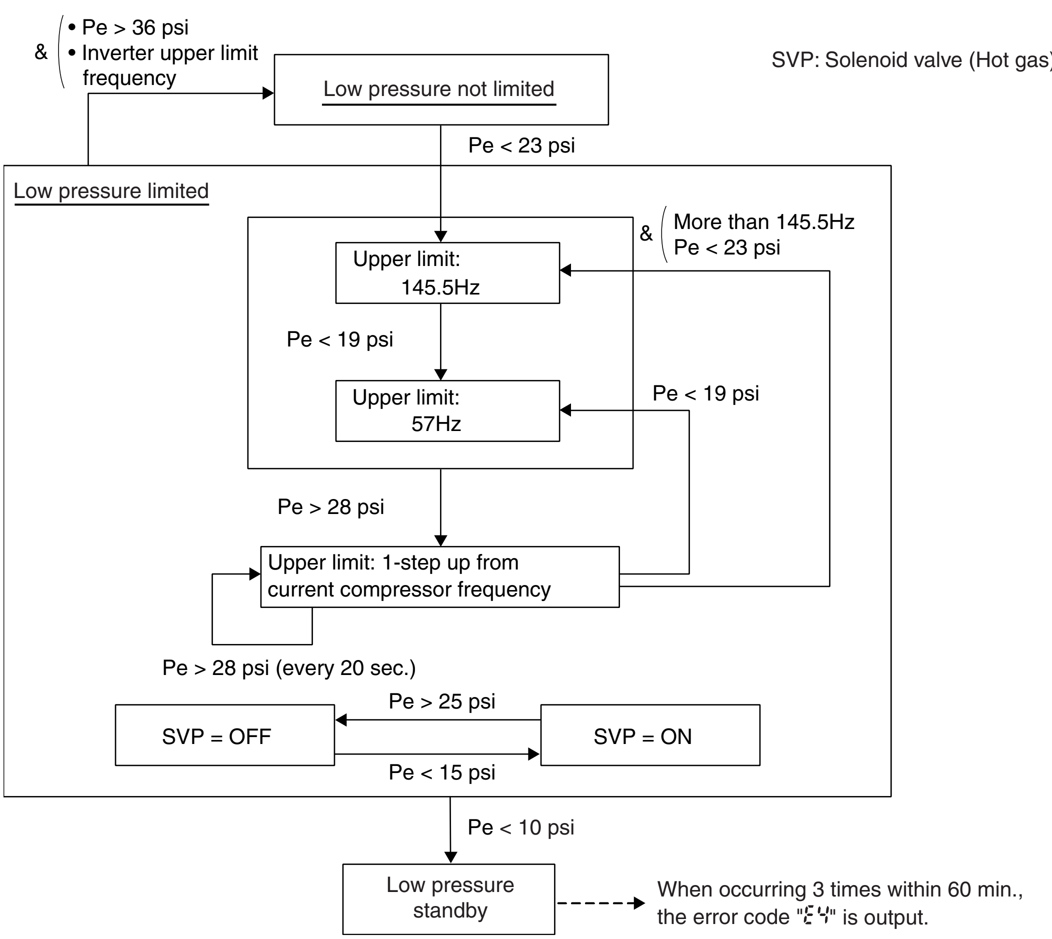
4.2 Low Pressure Protection Control

Pe: Low pressure sensor detection value
This low pressure protection control is used to protect compressors against the transient decrease of low pressure.

[Cooling]



[Heating]



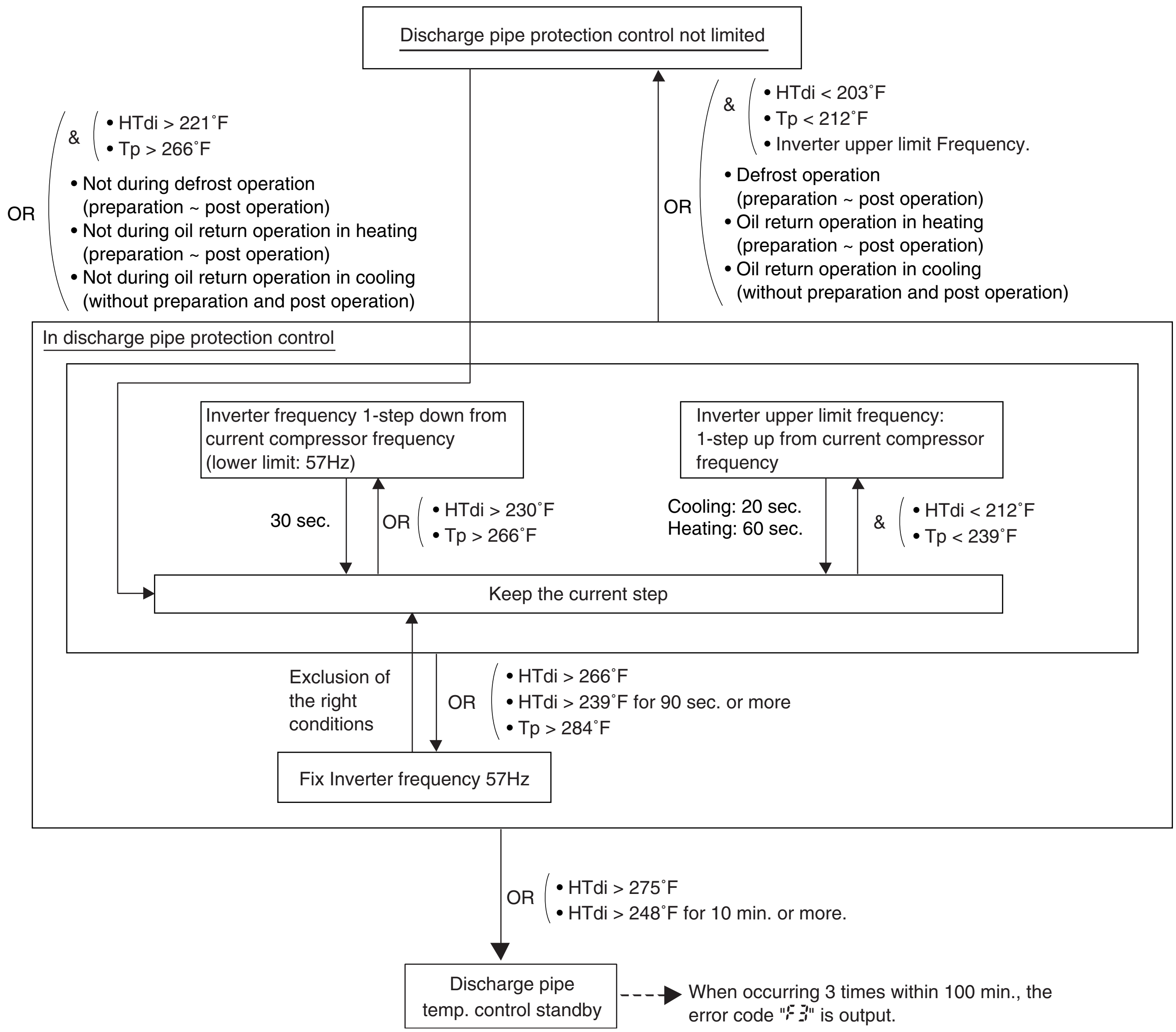
4.3 Discharge Pipe Protection Control

HTdi: Value of INV. compressor discharge pipe temperature (Tdi) compensated with outdoor air temperature

Tp: Value of compressor port temperature calculated by Tc and Te, and suction superheated degree.

This discharge pipe protection control is used to protect the compressor internal temperature against an error or transient increase of discharge pipe temperature.

[INV. compressor]

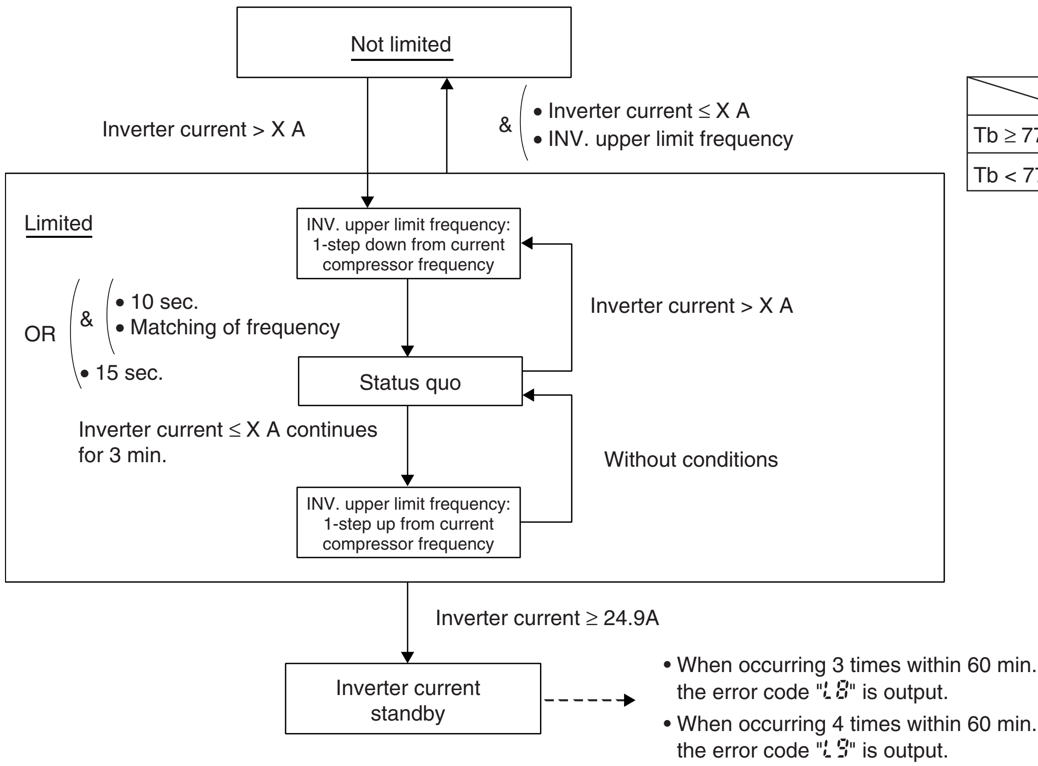


4.4 Inverter Protection Control

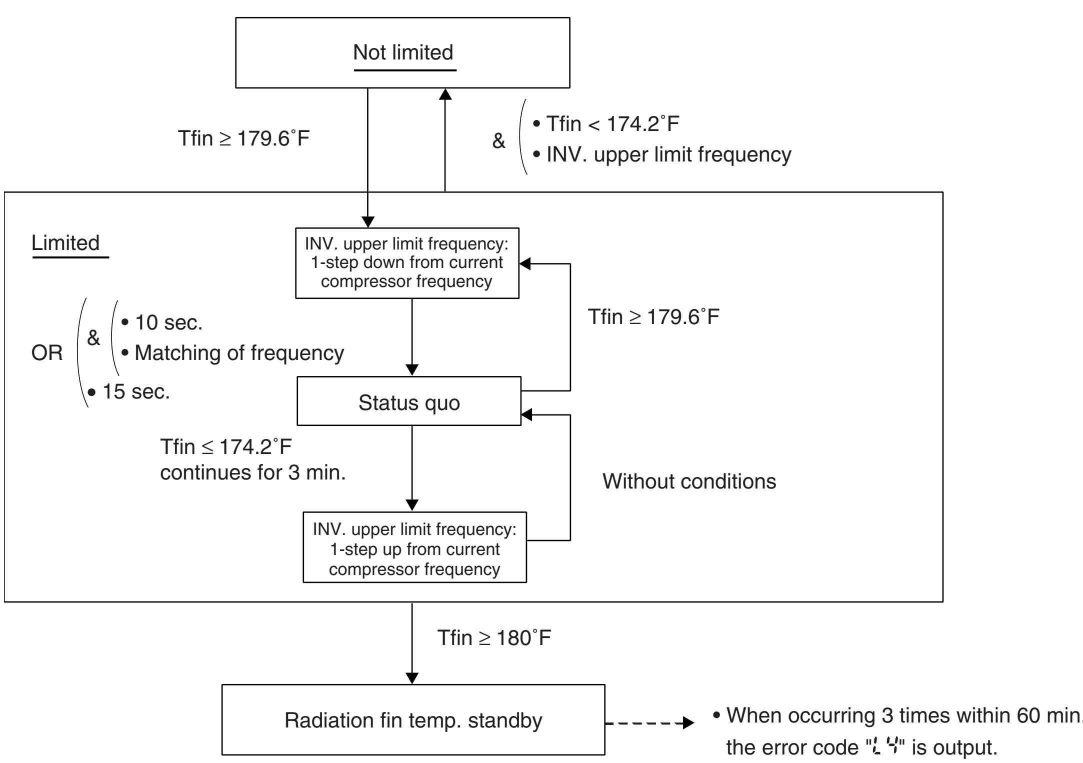
Tb: Outdoor unit heat exchanger temperature
Tfin: Radiation fin temperature
Inverter current protection control and radiation fin temperature control are performed to prevent tripping due to an error, or transient inverter overcurrent, and radiation fin temperature increase.

[Inverter overcurrent protection control]

	X A
Tb ≥ 77˚F	13.7
Tb < 77˚F	12.7



[Inverter radiation fin temperature control]



5. Other Control

5.1 Heating Operation Prohibition

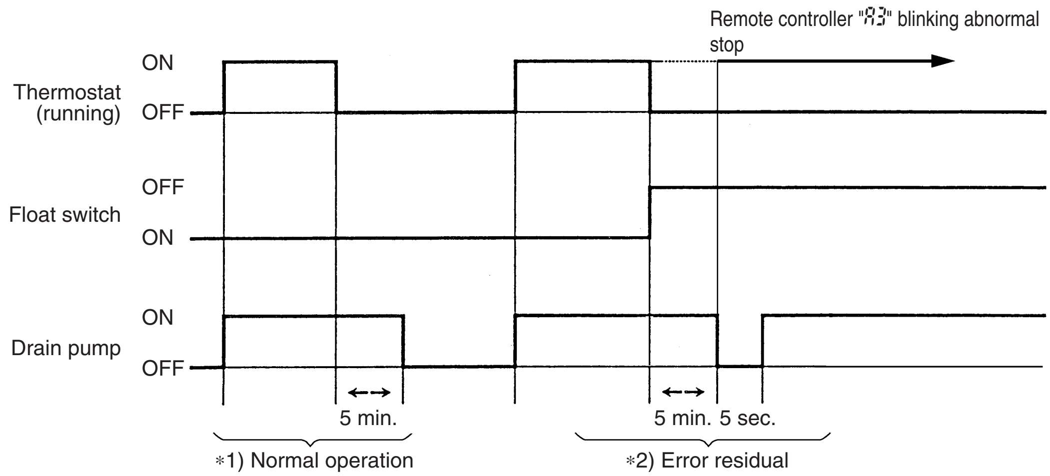
Heating operation is prohibited above 82°FDB outdoor air temperature.

6. Outline of Control (Indoor Unit)

6.1 Drain Pump Control

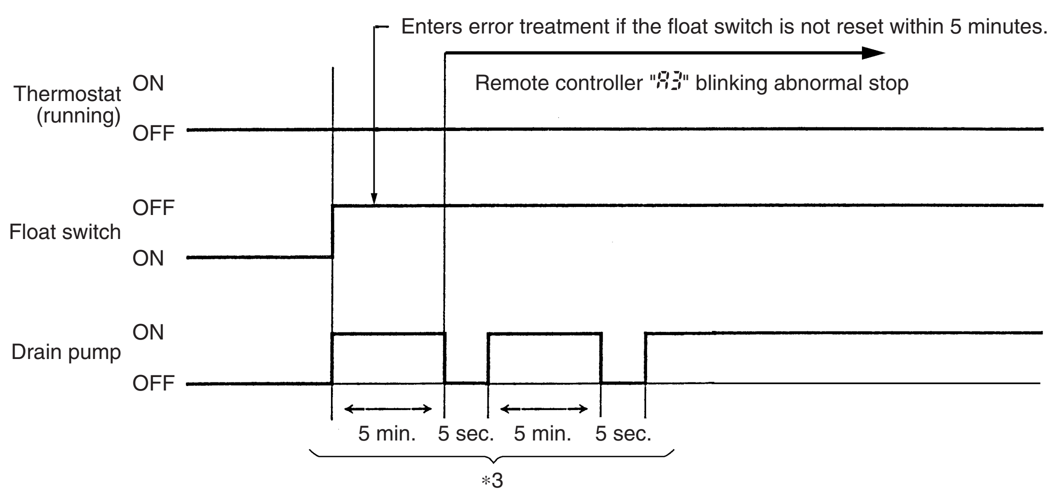
The drain pump is controlled by the ON/OFF buttons (4 button (1) - (4) given in the figure below).

6.1.1 When the Float Switch is Tripped while the Cooling Thermostat is ON:



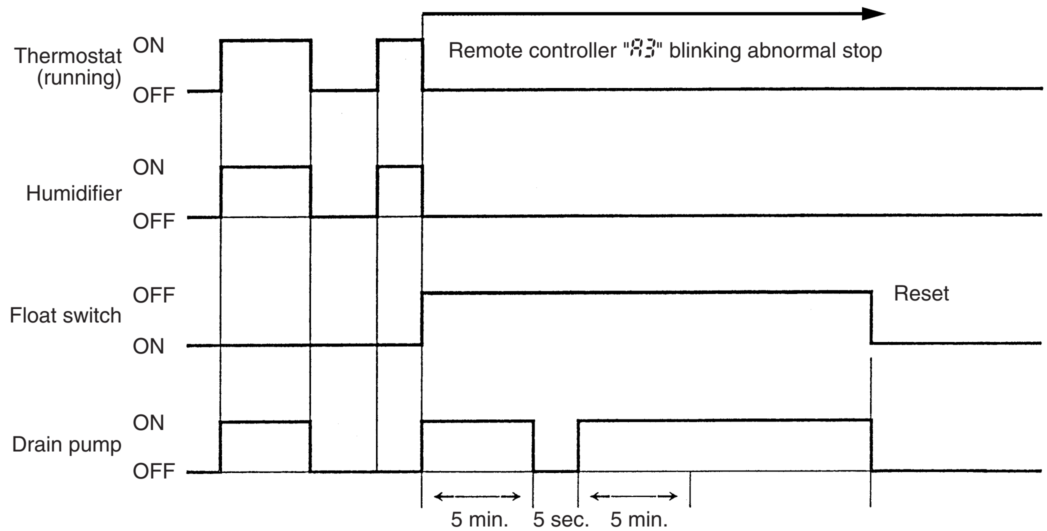
Note: ∗1. (Normal operation):
The objective of residual operation is to completely drain any moisture adhering to the fin of the indoor unit heat exchanger when the thermostat goes OFF during cooling operation.
∗2. (Error residual):
The remote controller will display "A3" and the air conditioner will come to an abnormal stop in 5 minutes if the float switch is turned OFF while the cooling thermostat is ON.

6.1.2 When the Float Switch is Tripped while the Cooling Thermostat is OFF:



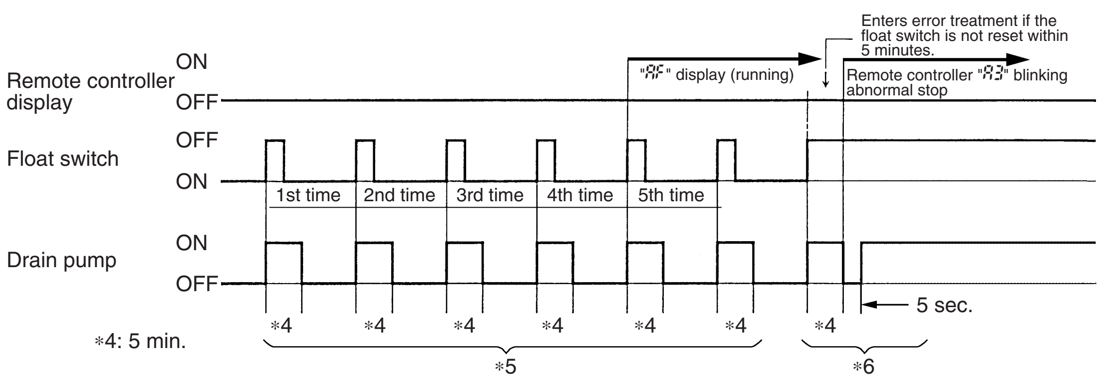
Note: ∗3. (Error residual):
The remote controller will display "A3" and the air conditioner will come to an abnormal stop if the float switch is turned OFF and not turned ON again within 5 minutes while the cooling thermostat is OFF.

6.1.3 When the Float Switch is Tripped during Heating Operation:



Note: During heating operation, if the float switch is not reset even after the 5 minutes operation, 5 seconds stop, 5 minutes operation cycle ends, operation continues until the switch is reset.

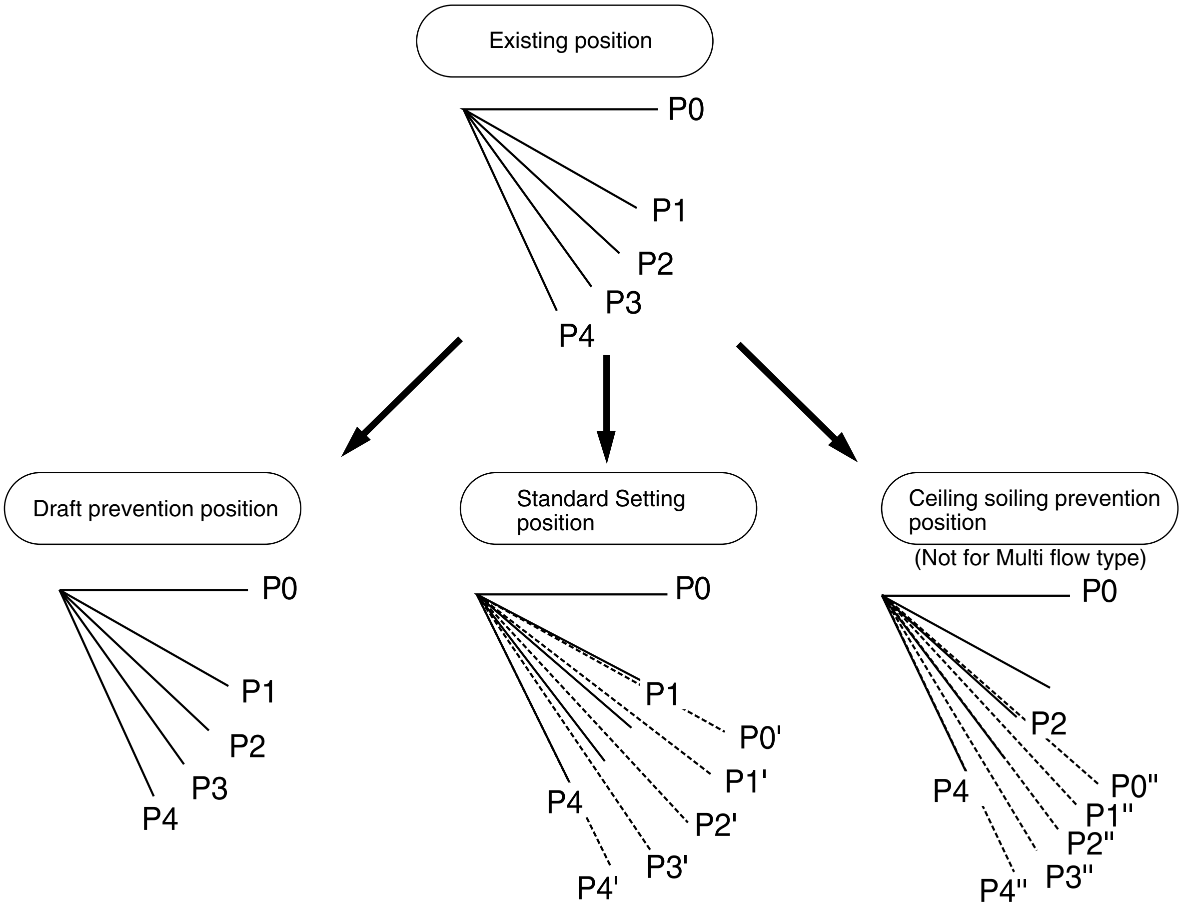
6.1.4 When the Float Switch is Tripped and “AF” is Displayed on the Remote Controller:



Note: ∗5. (Error residual):
If the float switch is tripped 5 times in succession, a drain error is determined to have occurred. “AF” is then displayed as operation continues.
∗6. (Error residual):
The remote controller will display "A3" and the air conditioner will come to an abnormal stop if the float switch is OFF for more than 5 minutes in the case of ∗5.

6.2 Louver Control for Preventing Ceiling Dirt

We have added a control feature that allows you to select the range of in which air direction can be adjusted in order to prevent the ceiling surrounding the air discharge outlet of ceiling mounted cassette type units from being soiled.



Draft prevention position	P0	P1	P2	P3	P4	Same as existing position
		Range of direction adjustment				
Standard position	Prohibited	P0' / P1'	P2'	P3'	P4'	Separated into 5 positions (P1 - 4)
		Range of direction adjustment				
Dirt prevention position	Prohibited	Prohibited	P0'' / P1''	P2''	P3'' / P4''	Separated into 5 positions (P2 - 4)

The factory setting position is standard position.

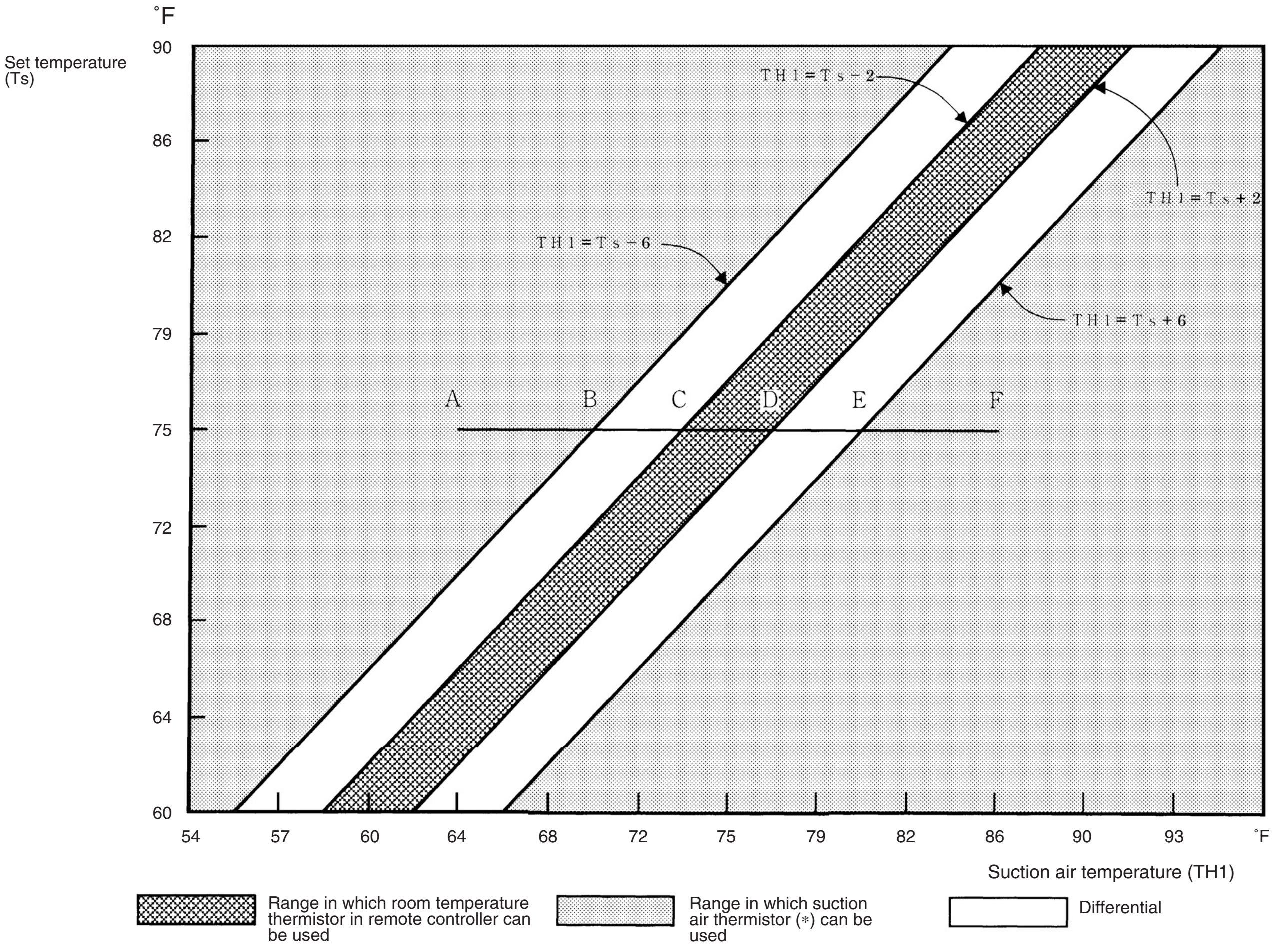
6.3 Room Temperature Thermistor in Remote Controller

Temperature is controlled by both the room temperature thermistor in remote controller and suction air thermistor (∗) in the indoor unit. (This is however limited to when the field setting for the room temperature thermistor in remote controller is set to "Use.")

Note: When outdoor air is introduced to the air conditioner with mixed into indoor air, the room temperature may fail to be set temperature, since TS and TH1 do not enter the area of "use range of remote control thermistor." In such a case, put the remote sensor (optional accessory) in your room, and use it with setting "do not use remote control thermostat."
∗ For FTQ: Remote sensor (Optional accessory)

Cooling

If there is a significant difference in the set temperature and the suction air temperature, fine adjustment control is carried out using suction air thermistor (∗) in the indoor unit, or using the room temperature thermistor in the remote controller near the position of the user when the suction air temperature is near the set temperature.



■ **Ex: When cooling**

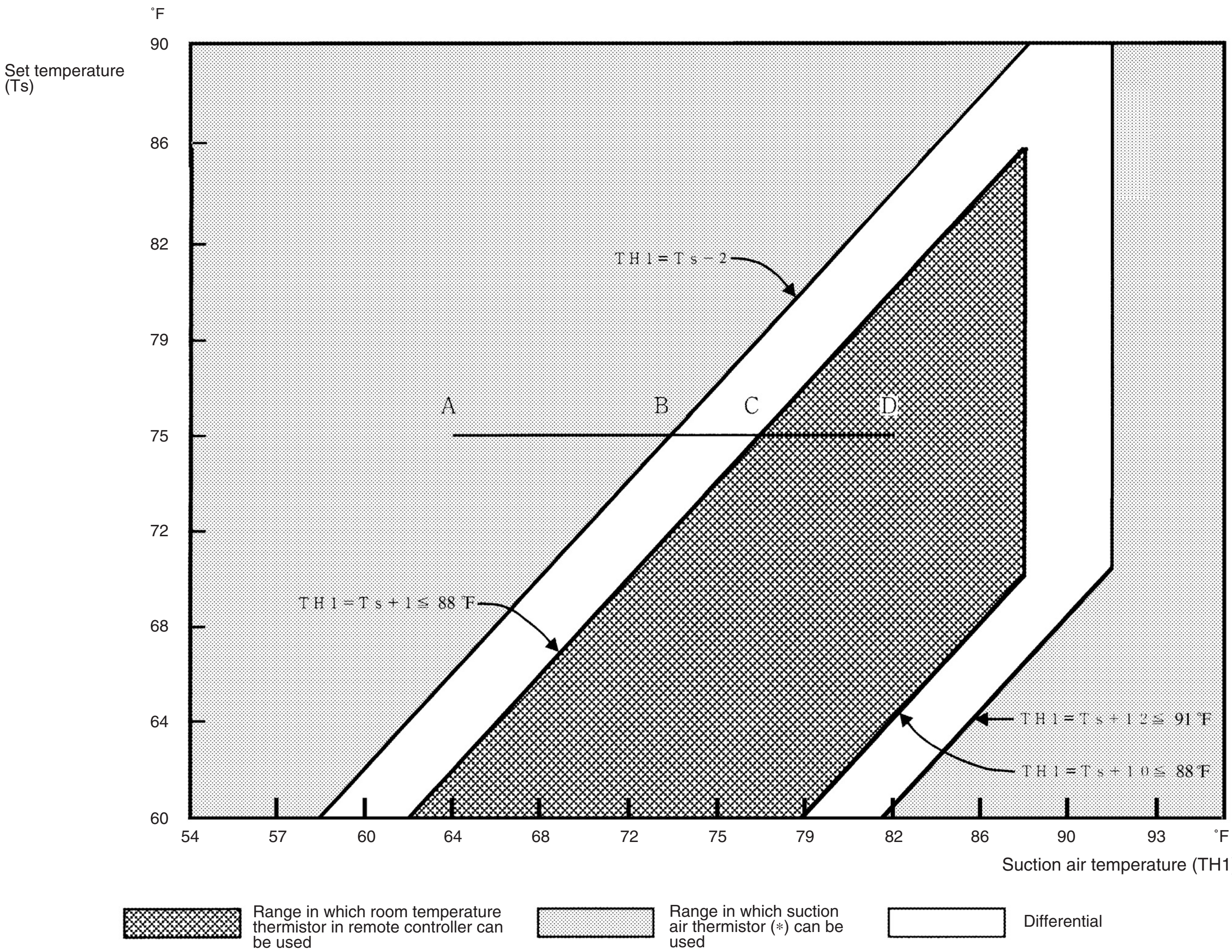
Assuming the set temperature in the figure above is 75°F, and the suction air temperature has changed from 64°F to 86°F (A → F):
(This example also assumes there are several other air conditioners, the system is OFF, and that temperature changes even when the thermostat is OFF.)
Suction air thermistor (∗) is used for temperatures from 64°F to 73°F (A → C).
Room temperature thermistor in remote controller is used for temperatures from 73°F to 81°F (C → E).
Suction air thermistor (∗) is used for temperatures from 81°F to 86°F (E → F).

And, assuming suction air temperature has changed from 86°F to 64°F (F → A):
Suction air thermistor (∗) is used for temperatures from 86°F to 77°F (F → D).
Room temperature thermistor in remote controller is used for temperatures from 77°F to 70°F (D → B).
Suction air thermistor (∗) is used for temperatures from 70°F to 64°F (B → A).

Note: ∗ For FTQ: Remote sensor (Optional accessory)

Heating

When heating, the hot air rises to the top of the room, resulting in the temperature being lower near the floor where the occupants are. When controlling by suction air thermistor (∗) only, the unit may therefore be turned OFF by the thermostat before the lower part of the room reaches the set temperature. The temperature can be controlled so the lower part of the room where the occupants are does not become cold by widening the range in which room temperature thermistor in remote controller can be used so that suction air temperature is higher than the set temperature.



■ **Ex: When heating**

Assuming the set temperature in the figure above is 75°F, and the suction air temperature has changed from 64°F to 82°F (A → D):

(This example also assumes there are several other air conditioners, the system is OFF, and that temperature changes even when the thermostat is OFF.)

Suction air thermistor (∗) is used for temperatures from 64°F to 77°F (A → C).

Room temperature thermistor in remote controller is used for temperatures from 77°F to 82°F (C → D).

And, assuming suction air temperature has changed from 82°F to 64°F (D → A):

Room temperature thermistor in remote controller is used for temperatures from 82°F to 73°F (D → B).

Suction air thermistor (∗) is used for temperatures from 73°F to 64°F (B → A).

Note: ∗ For FTQ: Remote sensor (Optional accessory)

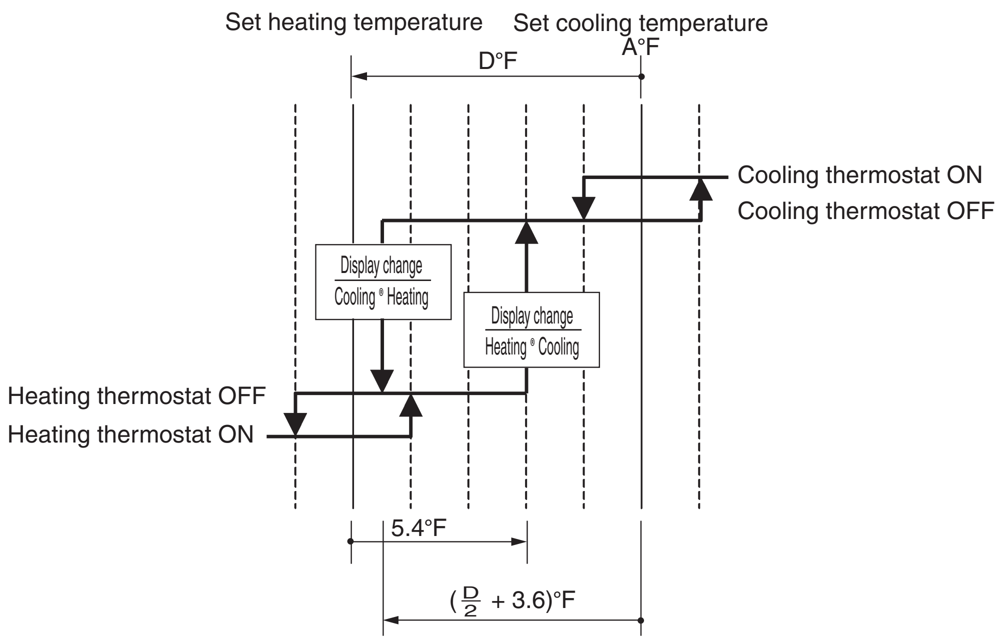
6.4 Thermostat Control with Operation Mode Set to "AUTO"

When the operation mode is set to "AUTO" on the remote controller, the system will conduct the temperature control shown below.

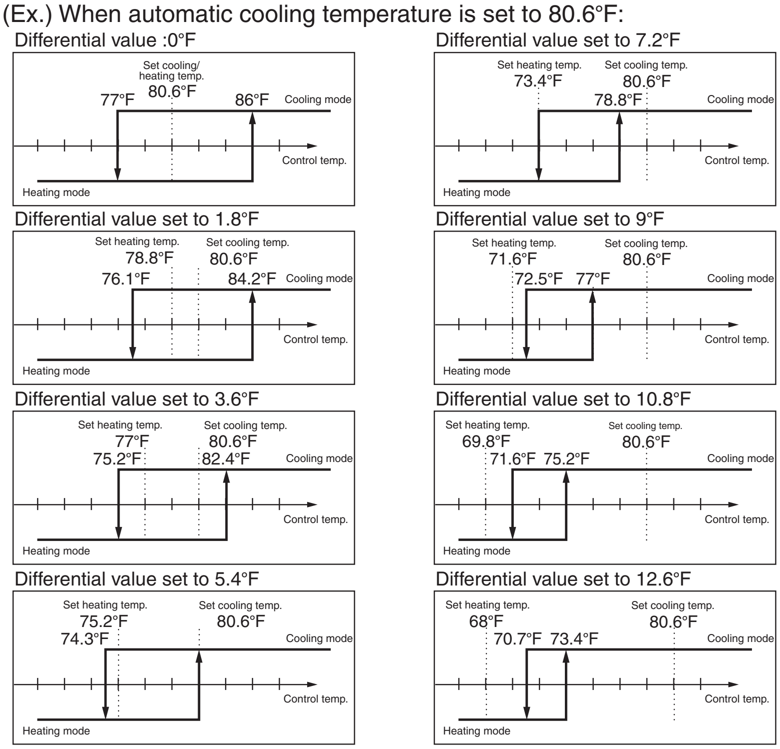
Furthermore, setting changes of the differential value (D°F) can be made according to information in the "Field settings from remote controller (P.70 and later)" section.

Mode No.	First code No.	Contents of setting	Second code No.							
			01	02	03	04	05	06	07	08
12	4	Differential value while in "AUTO" operation mode	0°F	1.8°F	3.6°F	5.4°F	7.2°F	9.0°F	10.8°F	12.6°F

▭ : Factory setting



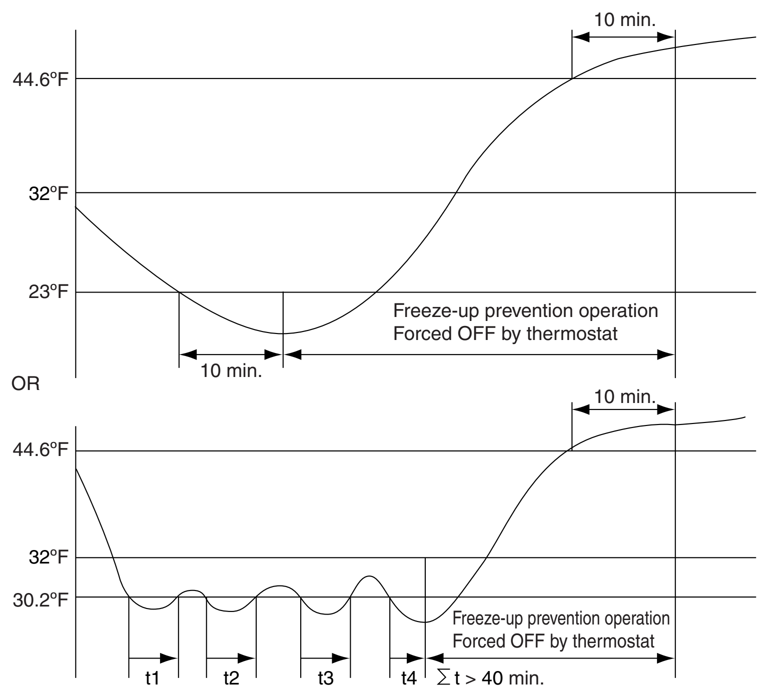
(Ex.) When automatic cooling temperature is set to 80.6°F:



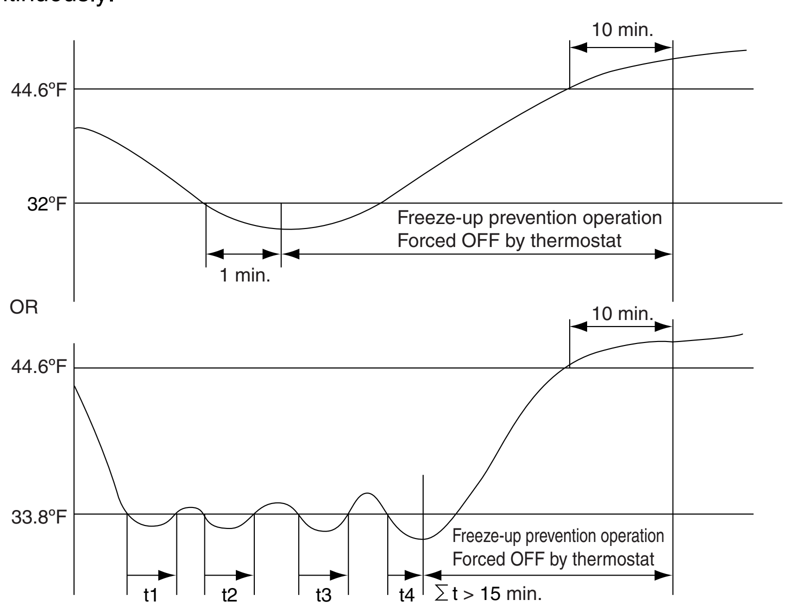
6.5 Freeze-up Prevention

Freeze-up Prevention by Off Cycle (Indoor Unit)

When the temperature detected by liquid pipe temperature thermistor (R2T) of the indoor unit heat exchanger drops too low, the unit enters freeze-up prevention operation in accordance with the following conditions, and is also set in accordance with the conditions given below.
When freeze-up prevention is activated, the electronic expansion valve is closed, the drain pump turns ON and the fan tap is fixed to L airflow. When the following conditions for stopping are satisfied, it returns.
Conditions for starting freeze-up prevention: Temperature is 30.2°F or less for total of 40 min., or temperature is 23°F or less for total of 10 min.
Conditions for stopping freeze-up prevention: Temperature is 44.6°F or more for 10 min. continuously



[Conditions for starting when airflow direction is 2-way or 3-way]
Conditions for starting: Temperature is 33.8°F or less for a total of 15 minutes or 32°F or less for 1 minute continuously.



6.6 View of Operations of Swing Flaps

Swing flaps work as following.

			Fan	Flap Control		
				FCQ	FHQ	FAQ
Heating	Hot-start from defrosting	Swinging	OFF	Level	Level	Level
		Setting the airflow direction	OFF	Level	Level	Level
	Defrosting	Swinging	OFF	Level	Level	Level
		Setting the airflow direction	OFF	Level	Level	Level
	Thermostat is OFF	Swinging	LL	Level	Level	Level
		Setting the airflow direction	LL	Level	Level	Level
	Hot-start from the state that the thermostat is OFF	Swinging	LL	Level	Level	Level
		Setting the airflow direction	LL	Level	Level	Level
	Halt	Swinging	OFF	Level	Level	Level
		Setting the airflow direction	OFF	Level	Level	Level
Cooling	Thermostat of program dry is ON	Swinging	L*1	Swinging	Swinging	Swinging
		Setting the airflow direction	L*1	Set up	Set up	Set up
	Thermostat of program dry is OFF	Swinging	OFF or L	Swinging	Swinging	Swinging
		Setting the airflow direction		Set up	Set up	Set up
	Cooling thermostat is OFF	Swinging	Set up	Swinging	Swinging	Swinging
		Setting the airflow direction	Set up	Set up	Set up	Set up
	Halt	Swinging	OFF	Level	Level	Level
		Setting the airflow direction	OFF	Set up	Level	Level
	Micro-computer is controlled (including the cooling state)	Swinging	L	Swinging	Swinging	Swinging
		Setting the airflow direction	L	Set up	Set up	Set up

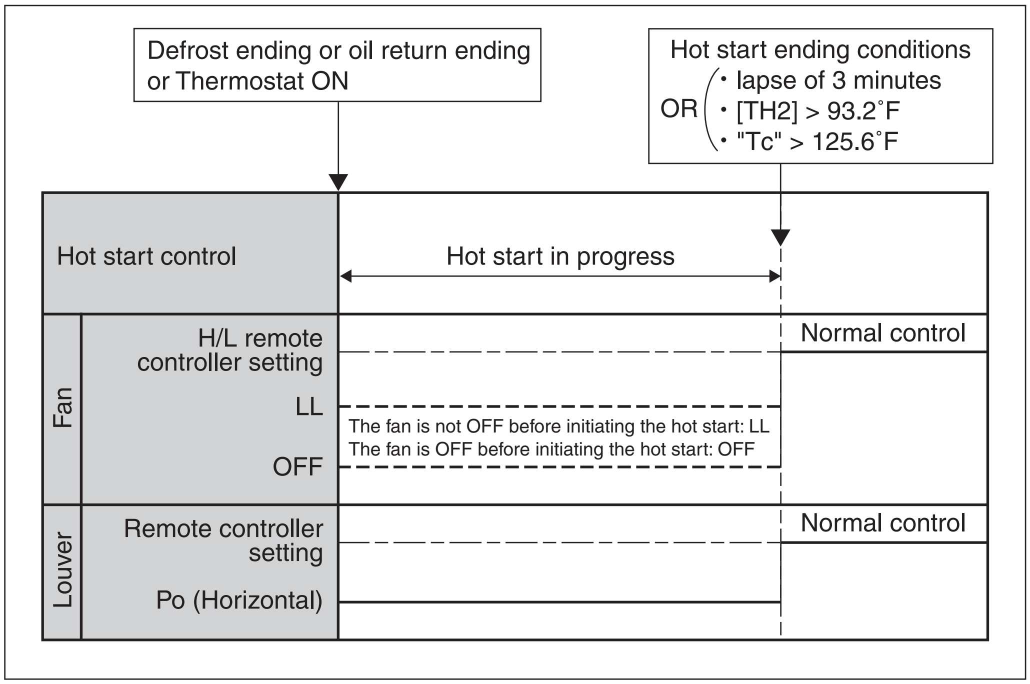
∗ 1. Only in FCQ case, L or LL.

6.7 Hot Start Control (In Heating Operation Only)

At startup with thermostat ON or after the completion of defrosting in heating operation, the indoor unit fan is controlled to prevent cold air from blasting out and ensure startup capacity.

[Detail of operation]

When either the **start condition 1** or the **start condition 2** is established, the operations shown below will be conducted.



TH_2: Temperature detected with the gas thermistor

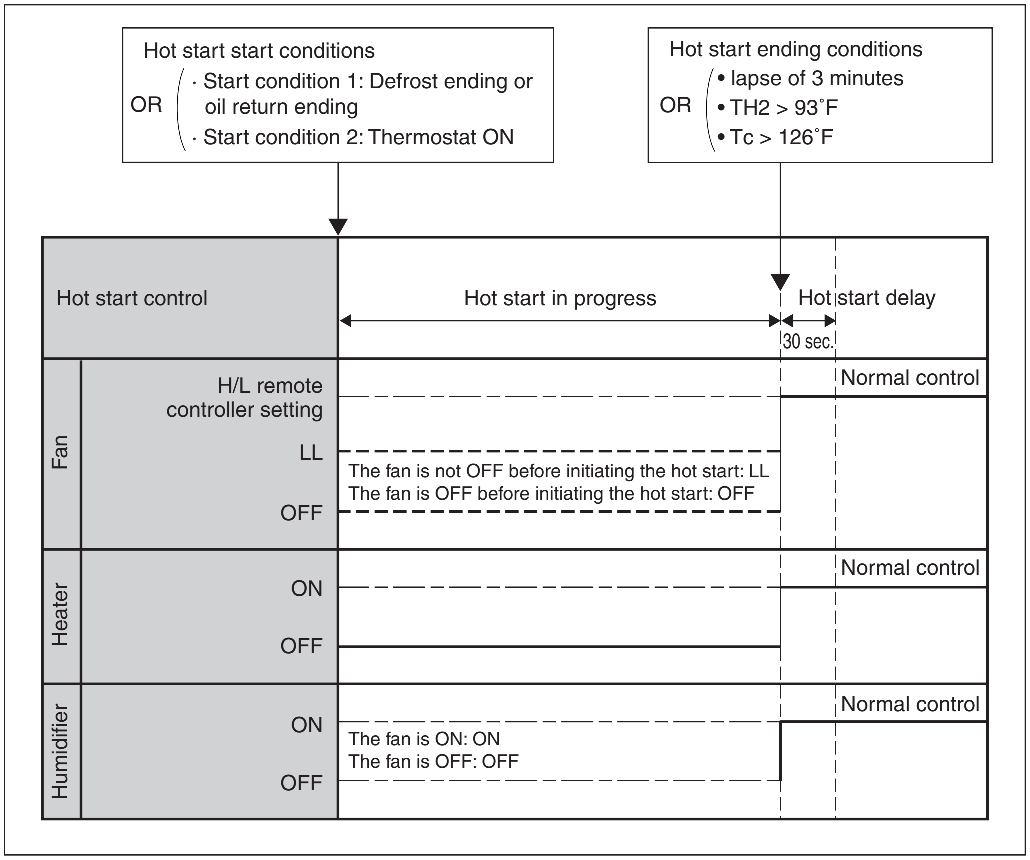
TC: High pressure equivalent saturated temperature

■ **FTQ**

At startup with thermostat ON or after the completion of defrosting in heating operation, the indoor unit fan is controlled to prevent cold air from blasting out and ensure startup capacity.

[Detail of operation]

When either the **start condition 1** or the **start condition 2** is established, the operations shown below will be conducted.



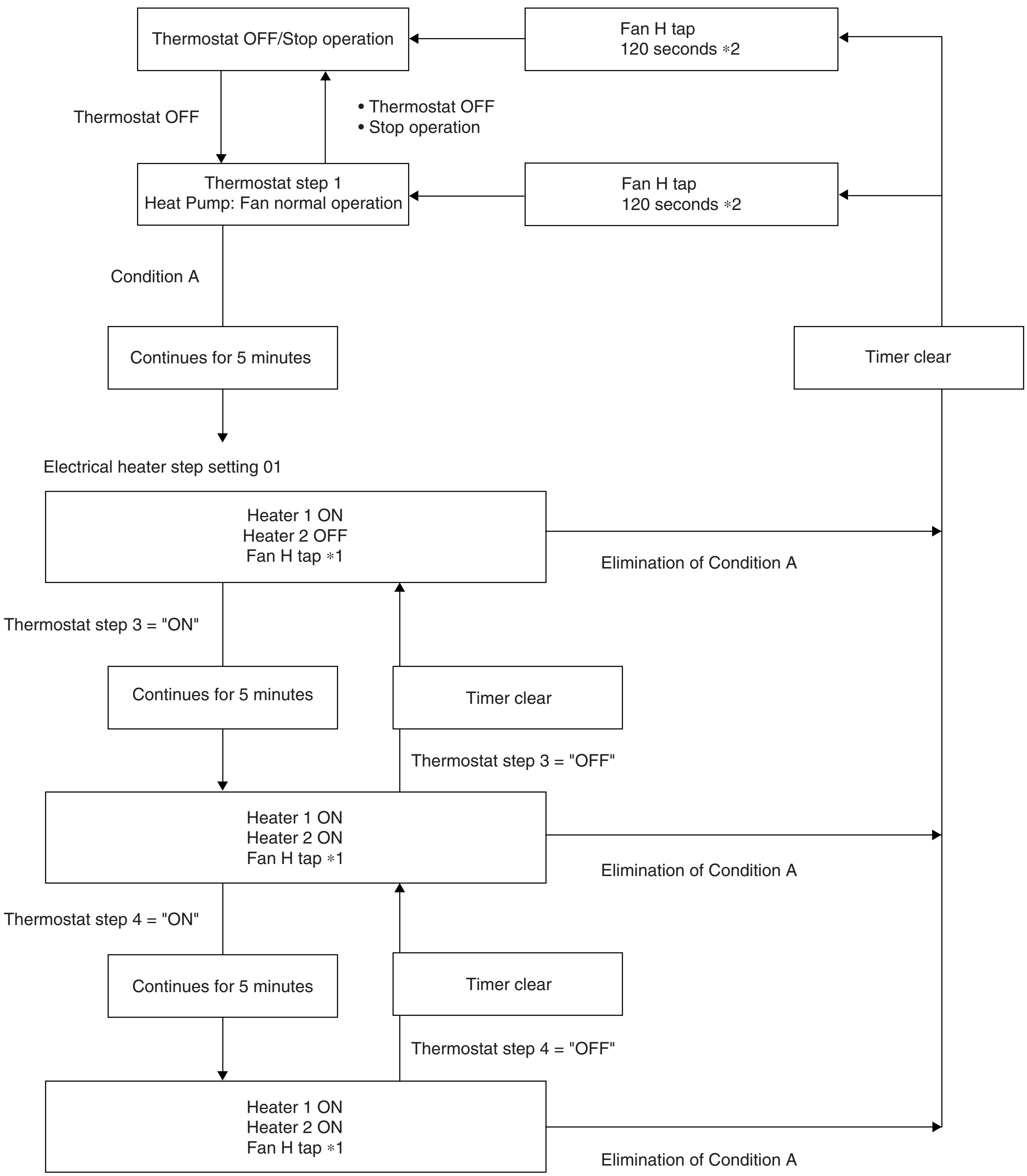
TH_2: Temperature detected with the gas thermistor

TC: High pressure equivalent saturated temperature

6.8 Heater Control (FTQ)

6.8.1 Auxiliary Heater Control

If heating is insufficient in heat pump system alone, an electrical heater is to be used as the auxiliary heater. The following shows the ON/OFF conditions for the electric heater.



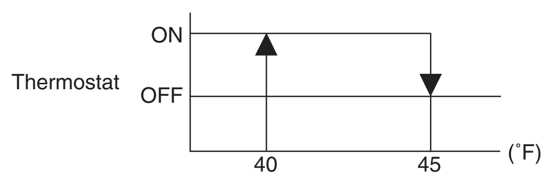
Condition A

& (all of the following)
- Thermostat step 2 = "ON"
- Heating mode
- Not during test operation
- Not during control operation
- High pressure condition = "ON" ∗3
- Liquid pipe temperature condition = "ON" ∗4
- Electrical heater setting = "3"

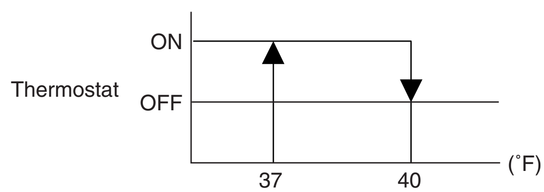
Note: ∗1: Fixing of the fan H tap

∗2: The operation should continue for a certain period of time after the heater turns OFF.

∗3: High pressure condition

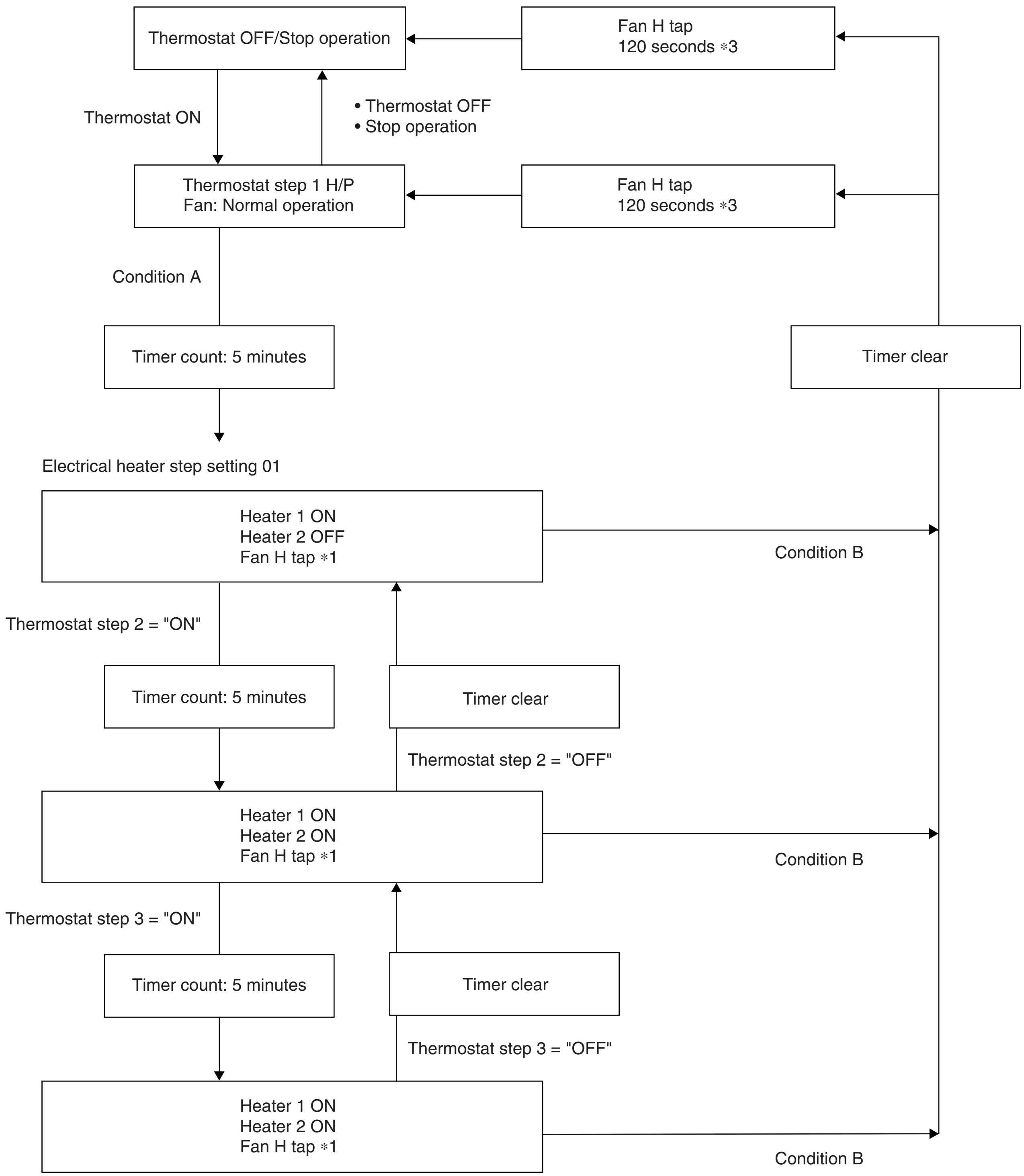


∗4: Liquid pipe temperature condition



6.8.2 Heat Pump Lockout Mode

During heating operation, users can select an electrical heater for heating. For this, signals are sent using ABC terminal of outdoor unit PCB.
When the hot-water heating signal is received from the outdoor unit PCB, heating operation is performed only with the heater as manual backup operation. The ON/OFF conditions for this electrical heater are shown below.



Condition A

& (
- Heating mode
- Thermostat step 1 = "ON"
- Not during fan residual operation
- & (OR (• [Electrical heater setting] = "01" • [Electrical heater setting] = "03") • Hot-water heater = "1" (ON))
)

Condition B

OR (
- Elimination of Condition A
- Indoor unit error [Stop due to error]
- Indoor unit error [Abnormal stop]
- Indoor unit error [Remote control thermistor error]
- Indoor unit error [Suction air thermistor error]
- During defrosting or oil return operation
)
} Heater backup prohibiting conditions ∗2

Note:
∗1: Fixing of the fan H tap.
∗2: The heater backup prohibiting conditions are prioritized. Even when the heater ON conditions are met, the heater is turned OFF when the prohibiting conditions are met.
∗3: The operation must continue for a certain period of time after the heater turns OFF.
4: The thermostat steps for this control comply with the “6.9 4 Step Thermostat Processing (FTQ)”.

6.9 4 Step Thermostat Processing (FTQ)

[Outline]

The thermostat ON/OFF for the indoor unit is controlled in accordance with [Thermostat Step 1].
The heater ON/OFF operation during heating is controlled in accordance with [Thermostat Step 2, 3, or 4] or [Thermostat Step 1, 2, or 3].
For more details of the heater, see 6.8 Heater control.

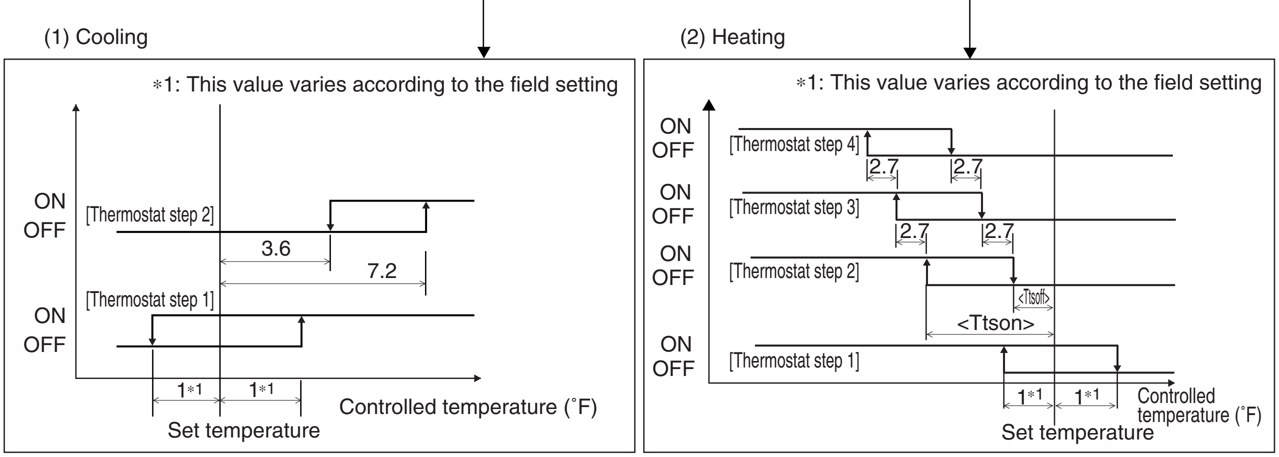
[Detail]

& (
- Drain pump abnormal output = OFF
- Thermostat OFF error has not occurred.
- Forced thermostat OFF = "0" (OFF)
- Normal operation = ON
- OR (• Remote control operation mode = "Heating" • Not during anti-freeze operation)
)

- [Thermostat step 1] = "OFF"
- [Thermostat step 2] = "OFF"
- [Thermostat step 3] = "OFF"
- [Thermostat step 4] = "OFF"

→ Perform the processing in the following chart.

← Elimination conditions of the above



6.10 Interlocked with External Equipment (FTQ)

6.10.1 Humidifier

When a humidifier is connected onsite, the fan operates with the airflow rate set of the remote controller or with the H tap.

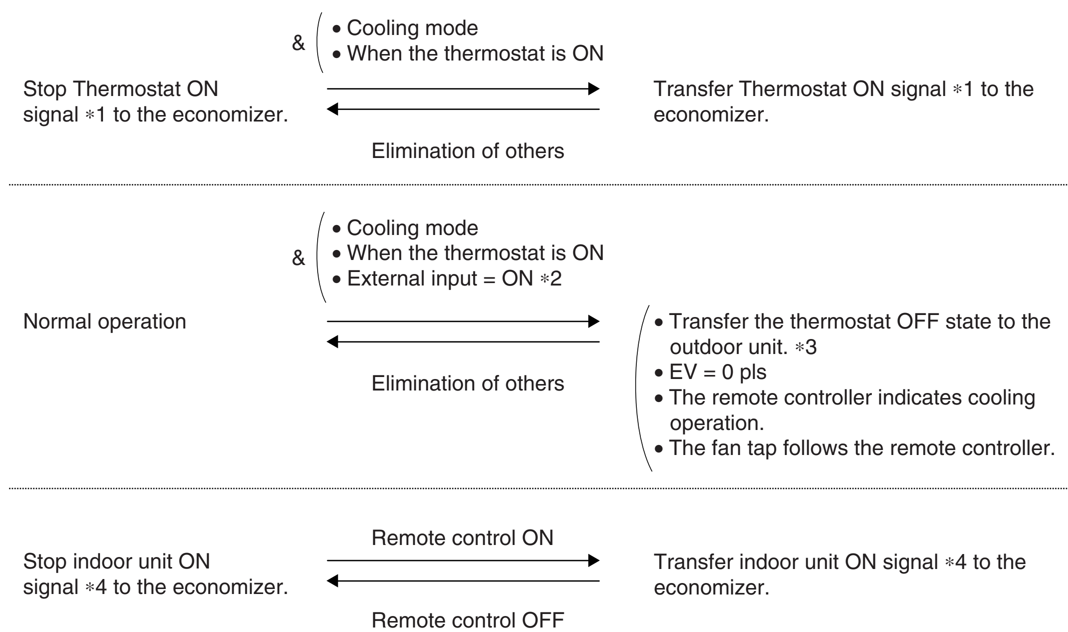
Condition		Result
& (• Remote control operation = ON (including thermostat OFF) • External input = ON	→	Fan X tap operation (Same operation as with the airflow rate selected with the remote controller)
& (• Remote control operation = ON (including thermostat OFF) • When the external input changes from ON to OFF.	→	Fan residual operation for Y seconds (The fan airflow rate is set with the X tap.)

Note:

1. This control is different from connection of humidifier and it is used for humidifiers locally connected in North America.
2. External input ON is an input signal to the “X12A” terminal on the PCB for additional I/O.

6.10.2 Economizer

When indoor and outdoor air temperatures are reversed, the compressor is stopped to let in the outdoor air to save energy.
This operation is called economizer operation, and the equipment to detect indoor and outdoor air temperatures and open and close the damper to perform this operation is called an economizer.
The economizer detects indoor and outdoor air temperatures, informs the air conditioner that the economizer operation is ready, and opens and closes the damper.
The indoor unit stops the outdoor unit when it receives a signal from the economizer and performs air supply operation.
When the indoor air temperature is cooled down sufficiently by the economizer operation, and it is no longer necessary (thermostat OFF), the indoor unit outputs a signal to the economizer to close the damper.

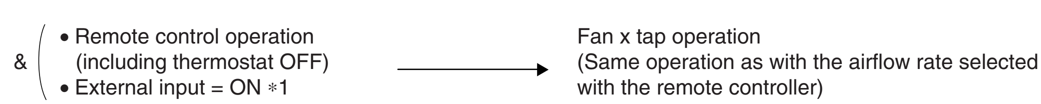


Note:

*1 Thermostat ON signal: A signal to turn ON the indoor unit thermostat and allow the economizer to open the damper.
It turns ON the relay on the “X8A side of X23A” on the PCB for additional I/O.
*2 External input ON is an input signal to the “X11A” terminal on the PCB for additional I/O.
*3 To stop the compressor while the economizer is in operation to save energy.
*4 Remote control ON signal: Contact output which shows the operating status of the indoor unit. This signal turns on the relay “on the opposite side of X8A of X23A” on the PCB for additional I/O.

6.10.3 Air Purifier

When an air purifier is connected onsite, the fan is operated with the airflow rate set of the remote controller or with the H tap.



Note:

*1 External input ON is an input signal to the “X25A” terminal on the PCB for additional I/O.

Part 5
Field Setting

1. Test Operation

1.1 Procedure and Outline

Follow the following procedure to conduct the initial test operation after installation.

1.1.1 Check Work Prior to Turn Power Supply ON

Step	Check items
Check the below items. • Power wiring • Control transmission wiring between units • Ground wire	○ Is the power supply single-phase 208-230V / 60Hz? ○ Have you finished a ductwork to drain? ○ Have you detach transport fitting? ○ Is the wiring performed as specified? ○ Are the designated wires used? ○ Is the grounding work completed? Use a 500V megger tester to measure the insulation. • Do not use a megger tester for other circuits than 200-230V circuit. ○ Are the setscrews of wiring not loose? ○ Is the electrical component box covered with an insulation cover completely?
⇩	
Check on refrigerant piping	○ Is pipe size proper? (The design pressure of this product is 478 psi.) ○ Are pipe insulation materials installed securely? Liquid and gas pipes need to be insulated. (Otherwise causes water leak.) ○ Are respective stop valves on liquid and gas line securely open?
⇩	
Check on amount of refrigerant charge	○ Is refrigerant charged up to the specified amount? If insufficient, charge the refrigerant from the service port of stop valve on the liquid side with outdoor unit in stop mode after turning power ON. ○ Has the amount of refrigerant charge been recorded on “Record Chart of Additional Refrigerant Charge Amount”?

1.1.2 Turn Power ON

Step	Check items
Turn outdoor unit power ON.	○ Be sure to turn the power ON 6 hours before starting operation to protect compressors. ○ Close outside panels of the outdoor unit.
⇩	
Turn indoor unit power ON.	
⇩	
Carry out field setting on outdoor unit PCB	

1.1.3 Check Operation

∗ During check operation, mount front panel to avoid the misjudging.
∗ Check operation is mandatory for normal unit operation.
(When the check operation is not executed, alarm code "U3" will be displayed.)

Press and hold the TEST button (BS4) on outdoor unit PCB for 5 seconds.

↓

Check on operation

○ The test operation is started automatically.
The following judgements are conducted within 15 minutes (about 30 minutes at the maximum).
- "Check for wrong wiring"
- "Check stop valve for not open"
- "Check for refrigerant charge"
- "Pipe length automatic judgement"

The following indications are conducted while in test operation.
- LED lamp on outdoor unit PCB — H2P blinks (test operation)
- Remote controller — Indicates "Under Centralized Control" on upper right.
  — Indicates "Test Operation" on lower left

On completion of test operation, LED on outdoor unit PCB displays the following.
H3P ON: Normal completion
H2P and H3P ON: Abnormal completion → Check the indoor unit remote controller for abnormal display and correct it.

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
(For normal completion)	●	●	○	●	●	●	●
(For abnormal completion)	●	○	○	●	●	●	●

Error code

In case of an error code displayed on remote controller:

Error code	Nonconformity during installation	Remedial action
E3	The stop valve of outdoor unit is not opened.	Open the gas-side stop valve and the liquid-side stop valve.
	Refrigerant overcharge.	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge amount by recovering any excessive refrigerant with a refrigerant recovery machine.
E4	The stop valve of outdoor unit is not opened.	Open the gas-side stop valve and the liquid-side stop valve.
	Insufficient refrigerant.	Check if the additional refrigerant charge has been finished correctly.
		Recalculate the required amount of refrigerant from the piping length and add an adequate amount of refrigerant.
F3	Refrigerant overcharge.	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge amount by recovering any excessive refrigerant with a refrigerant recovery machine.
	The stop valve of outdoor unit is not opened.	Open the gas-side stop valve and the liquid-side stop valve.
	Insufficient refrigerant.	Check if the additional refrigerant charge has been finished correctly.
		Recalculate the required amount of refrigerant from the piping length and add an adequate amount of refrigerant.
F6	Refrigerant overcharge	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge amount by recovering any excessive refrigerant with a refrigerant recovery machine.
U2	Insufficient supply voltage	Check to see if the supply voltage is supplied properly.
U3	If a check operation has not been performed.	Perform a check operation.
U4	No power is supplied to outdoor unit.	Turn the power ON for the outdoor unit.
UF	The stop valve of outdoor unit is not opened.	Open the gas-side stop valve and the liquid-side stop valve.
	If the right indoor unit piping and wiring are not properly connected to the outdoor unit.	Make sure that the right indoor unit piping and wiring are properly connected to the outdoor unit.
UH	If the interunit wiring has not be connected or it has shorted.	Make sure the interunit wiring is correctly attached to terminals (X2M) F1/F2 (TO IN/D UNIT) on the outdoor unit PCB.

1.1.4 Confirmation on Normal Operation

- Conduct normal unit operation after the check operation has been completed.
  (When outdoor air temperature is 82°FDB or higher, the unit can not be operated with heating mode. See the installation manual attached.)
- Confirm that the indoor/outdoor units can be operated normally.
  (When an abnormal noise due to liquid compression by the compressor can be heard, stop the unit immediately, and then on the crankcase heater to heat up it sufficiently, then start operation again.)
- Operate indoor unit one by one to check that the corresponding outdoor unit operates.
- Confirm that the indoor unit discharges cold air (or warm air).
- Operate the air direction control button and airflow rate control button to check the function of the devices.

1.2 Operation when Power is Turned ON

1.2.1 When Turning ON Power First Time

The unit cannot be run for up to 12 minutes to automatically set the main power and address (indoor-outdoor address, etc.).

Status

Outdoor unit	Test lamp H2P .... Blinks Can also be set during operation described above.
Indoor unit	If ON button is pressed during operation described above, the "UH" error indicator blinks. (Returns to normal when automatic setting is complete.)

1.2.2 When Turning ON Power the Second Time and Subsequent

Tap the RESET(BS5) button on the outdoor unit PCB. Operation becomes possible for about 2 minutes. If you do not press the RESET button, the unit cannot be run for up to 10 minutes to automatically set main power.

Status

Outdoor unit	Test lamp H2P .... Blinks Can also be set during operation described above.
Indoor unit	If ON button is pressed during operation described above, the operation lamp lights but the compressor does not operate. (Returns to normal when automatic setting is complete.)

1.2.3 When an Indoor Unit or Outdoor Unit has been Added, or Indoor or Outdoor Unit PCB has been Changed

Be sure to press and hold the RESET button for 5 seconds. If not, the addition cannot be recognized. In this case, the unit cannot be run for up to 12 minutes to automatically set the address (indoor-outdoor address, etc.)

Status

Outdoor unit	Test lamp H2P .... ON Can also be set during operation described above.
Indoor unit	If ON button is pressed during operation described above, the "UH" or "U4" error indicator blinks. (Returns to normal when automatic setting is complete.)

2. Field Setting from Remote Controller

Individual function of indoor unit can be changed from the remote controller. At the time of installation or after service inspection / repair, make the local setting in accordance with the following description.
Wrong setting may cause error.
(When optional accessory is mounted on the indoor unit, setting for the indoor unit may be required to change. Refer to information in the option handbook.)

2.1 Wired Remote Controller

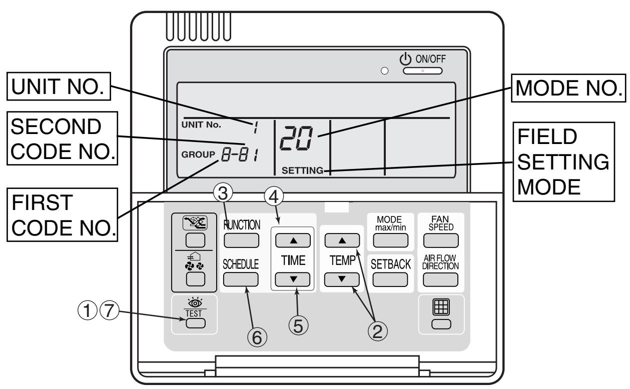
2.1.1 BRC1D71

■ **Applicable Models**

Model Series	FCQ	FHQ	FAQ	FBQ	FTQ
Wired Remote Controller with Weekly Schedule Timer	BRC1D71				—
Navigation Remote Controller	BRC1E71				

■ **BRC1D71**

If optional accessories are mounted on the indoor unit, the indoor unit setting may have to be changed. Refer to the instruction manual for each optional accessory.



1. When in the normal mode, press the “ ” button (①) for 4 seconds or more, and the FIELD SETTING MODE is entered.
2. Select the desired MODE NO. with the “ ” button (②).
3. During group control, when setting by each indoor unit (mode No. 20, 22 and 23 have been selected), press the “ ” button (③) and select the INDOOR UNIT NO. to be set. (This operation is unnecessary when setting by group.)
4. Press the “ ” upper button (④) and select FIRST CODE NO.
5. Press the “ ” lower button (⑤) and select the SECOND CODE NO.
6. Press the “ ” button (⑥) once and the present settings are SET.
7. Press the “ ” button (⑦) to return to the NORMAL MODE.

■ **Example**

When setting the filter sign time to “Filter Contamination Heavy” in all group unit setting, set the Mode No. to “10”, first code No. to “0” and second code No. to “02”.

2.1.2 BRC1E71

1 Press and hold Cancel button for 4 seconds or more.
Service settings menu is displayed.

2 Select Field Settings in the Service Settings menu, and press Menu/OK button.
Field settings screen is displayed.

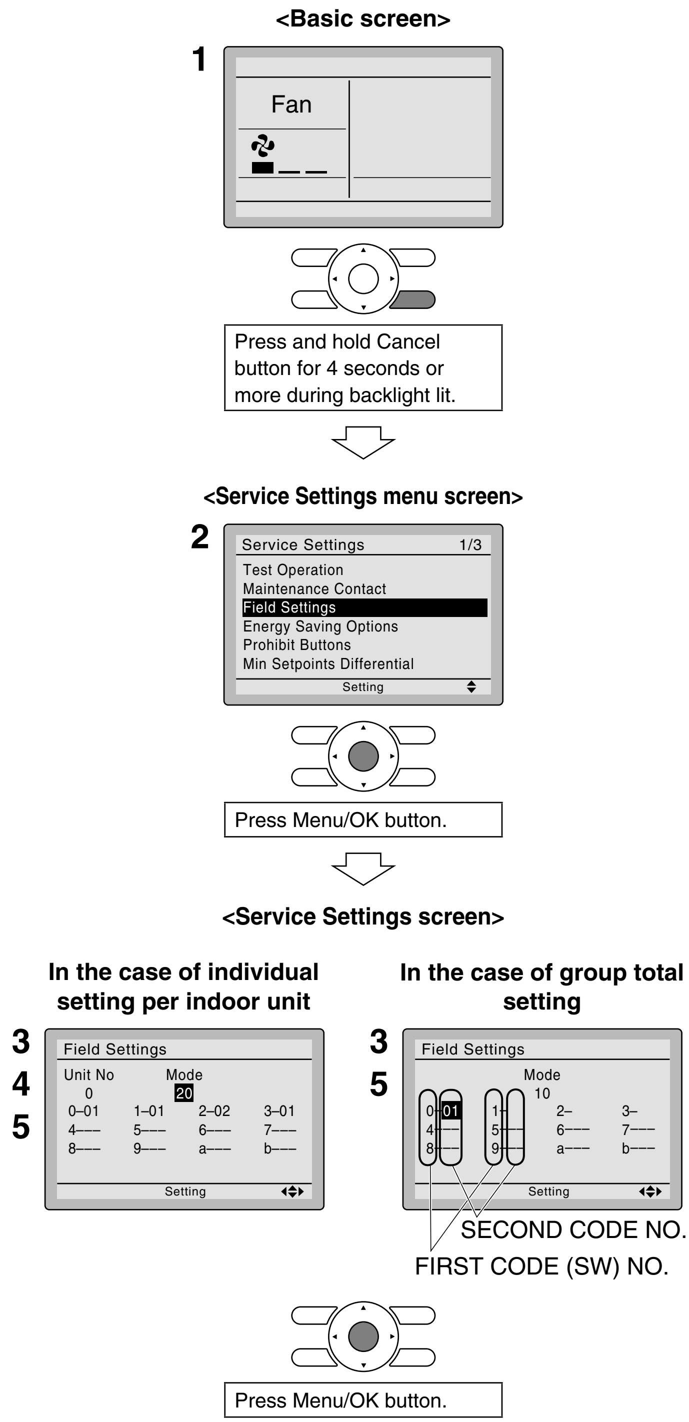
3 Highlight the mode, and select desired “Mode No.” by using ▲▼ (Up/Down) button.

4 In the case of setting per indoor unit during group control (When Mode No. such as 20 , 21 , 22 , 23 , 25 are selected), highlight the unit No. and select “Indoor unit No.” to be set by using ▲▼ (Up/Down) button.
(In the case of group total setting, this operation is not needed.)

> In the case of individual setting per indoor unit, current settings are displayed. And, SECOND CODE NO. “ - ” means no function.

5 Highlight SECOND CODE NO. of the FIRST CODE NO. to be changed, and select desired “SECOND CODE NO.” by using ▲▼ (Up/Down) button. Multiple identical mode number settings are available.

> In case of setting for all indoor units in the remote control group, available SECOND CODE NO. is displayed as “ ∗ ” which means it can be changed.
> When SECOND CODE NO. is displayed as “ - ”, there is no function.



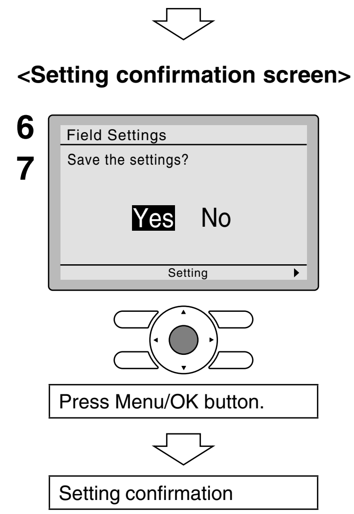
6 Press Menu/OK button. Setting confirmation screen is displayed.

7 Select Yes and press Menu/OK button. Setting details are determined and field settings screen returns.

8 In the case of multiple setting changes, repeat "**3**" to "**7**".

9 After all setting changes are completed, press Cancel button twice.

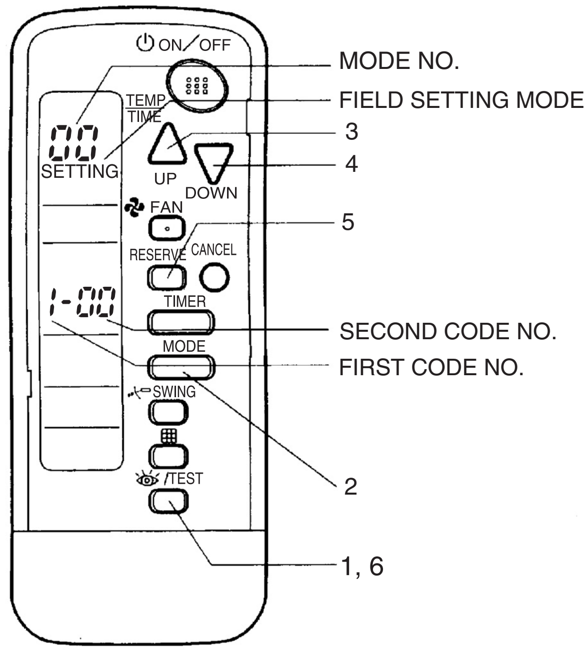
10 Backlight goes out, and "Checking the connection. Please standby." is displayed for initialization. After the initialization, the basic screen returns.



NOTE

- Installation of optional accessories on the indoor unit may require changes to field settings. See the manual of the optional accessory.
- For field setting details related to the indoor unit, see installation manual shipped with the indoor unit.

2.2 Wireless Remote Controller



1. When in the normal mode, press the " /TEST " button for 4 seconds or more, and operation then enters the "field setting mode."
2. Select the desired "mode No." with the " MODE " button.
3. Pressing the " UP " button, select the first code No.
4. Pressing the " DOWN " button, select the second code No.
5. Press the timer " RESERVE " button and check the settings.
6. Press the " /TEST " button to return to the normal mode.

(Example)
When setting the filter sign time to "Filter Dirtiness-High" in all group unit setting, set the Mode No. to "10", Mode setting No. to "0" and second code No. to "02".

2.3 Setting Contents and Code No. for Indoor Units

: Factory setting

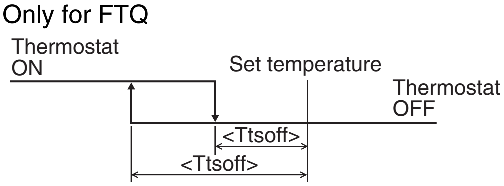
<table>
<tr><th rowspan="2">Mode No.</th><th rowspan="2">First Code No.</th><th rowspan="2">Description of Setting</th><th colspan="4">Second Code No.</th></tr>
<tr><th>01</th><th>02</th><th>03</th><th>04</th></tr>
<tr><td rowspan="8">10
(20)</td><td>0</td><td>Filter cleaning sign time</td><td>Light</td><td>Heavy</td><td>—</td><td>—</td></tr>
<tr><td>0 *5</td><td>Filter dirt</td><td>Light</td><td>Heavy</td><td>—</td><td>—</td></tr>
<tr><td>1</td><td>Filter type</td><td>Long life filter</td><td>Ultra long life filter</td><td>—</td><td>—</td></tr>
<tr><td>1 *5</td><td>Filter cleaning sign time (Light/Heavy)</td><td>2,500/1,250</td><td>10,000/5,000</td><td>—</td><td>—</td></tr>
<tr><td>2</td><td>Remote controller thermistor</td><td>Use</td><td>Not use</td><td>—</td><td>—</td></tr>
<tr><td>2 *5</td><td>Remote sensor and remote controller thermistor</td><td>Both</td><td>Remote thermistor</td><td>Remote controller thermistor</td><td>—</td></tr>
<tr><td>3</td><td>Filter sign display</td><td>ON</td><td>OFF</td><td>—</td><td>—</td></tr>
<tr><td>7</td><td>4-step thermostat processing</td><td colspan="4"><table>
<tr><td>Symbol *6</td><td>01</td><td>02</td><td>03</td><td>04</td><td>05</td><td>06</td></tr>
<tr><td>Ttson</td><td>-7.2°F</td><td>-6.3°F</td><td>-5.4°F</td><td>-4.5°F</td><td>-3.6°F</td><td>-2.7°F</td></tr>
<tr><td>Ttsoff</td><td>-3.6°F</td><td>-2.7°F</td><td>-1.8°F</td><td>-0.9°F</td><td>0°F</td><td>-0.9°F</td></tr>
</table></td></tr>
<tr><td rowspan="2">11
(21)</td><td>3 *5</td><td>Electric heater setting</td><td>Heat Pump lockout mode</td><td>—</td><td>Auxiliary electric heater + Heat Pump lockout mode</td><td>—</td></tr>
<tr><td>5 *5</td><td>Electric heater step setting</td><td>With heater</td><td>—</td><td>Without heater</td><td>—</td></tr>
<tr><td rowspan="5">12
(22)</td><td>0</td><td>Optional accessories output selection (Field selection of output for adaptor for wiring)</td><td>Indoor Unit turned ON by thermostat</td><td>—</td><td>Operation output</td><td>Error output</td></tr>
<tr><td>1</td><td>ON/OFF Input from outside (Set when ON/OFF is to be controlled from outside.)</td><td>Forced Off</td><td>ON/OFF control</td><td>External protection device input</td><td>—</td></tr>
<tr><td>2</td><td>Thermostat differential changeover (Set when remote sensor is to be used.)</td><td>2 °F</td><td>1 °F *7</td><td>—</td><td>—</td></tr>
<tr><td>3</td><td>Set fan speed when thermostat OFF</td><td>LL</td><td>Set fan speed</td><td>—</td><td>—</td></tr>
<tr><td>5</td><td>Power failure automatic reset (Auto restart)</td><td>No equipped</td><td>Equipped</td><td>—</td><td>—</td></tr>
<tr><td rowspan="4">13
(23)</td><td>0</td><td>Airflow adjustment ceiling height</td><td>N</td><td>H</td><td>S</td><td>—</td></tr>
<tr><td>1</td><td>Airflow direction</td><td>F
(4 directions)</td><td>T
(3 directions)</td><td>W
(2 directions)</td><td>—</td></tr>
<tr><td>4</td><td>Field setting airflow position setting</td><td>Draft prevention</td><td>Standard</td><td>Ceiling soiling prevention</td><td>—</td></tr>
<tr><td>5</td><td>Setting of static pressure selection</td><td>Standard</td><td>High static pressure</td><td>—</td><td>—</td></tr>
<tr><td rowspan="2">14
(24)</td><td>4 *5</td><td>Setting of humidifier / air purifier fan tap</td><td>Remote controller setting</td><td>H tap</td><td>—</td><td>—</td></tr>
<tr><td>5 *5</td><td>Humidifier residual operation time</td><td>30 sec.</td><td>60 sec.</td><td>120 sec.</td><td>—</td></tr>
</table>

Note:

1. Settings are made simultaneously for the entire group, however, if you select the mode No. inside parentheses, you can also set by each individual unit. Setting changes however cannot be checked except in the individual mode for those in parentheses.
2. The mode numbers inside parentheses cannot be used by wireless remote controllers, so they cannot be set individually. Setting changes also cannot be checked.
3. Do not make settings other than those described above. Nothing is displayed for functions the indoor unit is not equipped with.
4. "88" may be displayed to indicate the remote controller is resetting when returning to the normal mode.

*5. Only for FTQ

*6.



*7. For FTQ: Factory setting is "02".

2.3.1 Applicable Range of Field Setting

Mode No.	First Code No.	Description of Setting	FCQ	FHQ	FAQ	FBQ	FTQ
10 (20)	0	Filter cleaning sign time	○	○	○	○	—
	0	Filter dirt	—	—	—	—	○
	1	Filter type	○	—	—	—	—
	1	Filter cleaning sign time	—	—	—	—	○
	2	Remote controller thermistor	○	○	○	○	—
	2	Remote sensor and remote controller thermistor	—	—	—	—	○
	3	Filter sign display	○	○	○	○	○
	7	4-step thermostat processing	—	—	—	—	○
11 (21)	3	Electric heater setting	—	—	—	—	○
	5	Electric heater step setting	—	—	—	—	○
12 (22)	0	Optional accessories output selection	○	○	○	○	○
	1	ON/OFF Input from outside	○	○	○	○	○
	2	Thermostat differential changeover	○	—	—	○	—
	3	Set fan speed when thermostat OFF	○	○	○	○	○
	5	Power failure automatic reset (Auto Restart)	○	○	○	○	○
13 (23)	0	Airflow adjustment ceiling height	○	○	—	○	—
	1	Airflow direction	○	—	—	—	—
	4	Field setting airflow position setting	○	—	—	—	—
14 (24)	4	Setting of humidifier / air purifier fan tap	—	—	—	—	○
	5	Humidifier residual operation time	—	—	—	—	○

2.3.2 Detailed Explanation of Setting Modes

Filter Sign Setting

If switching the filter sign ON time, set as given in the table below.

Filter Specs. / Setting	Mode No.	First Code No.	Second Code No.	Lighting interval of the filter sign (hours)		
				Standard	Long Life	Ultra Long Life Filter
Contamination Light	10(20)	0	01	200 hrs.	2,500 hrs.	10,000 hrs.
Contamination Heavy			02	100 hrs.	1,250 hrs.	5,000 hrs.

Electrical Heater Setting

Selection of the heater

The capacity of the electrical heater should be selected locally.

Mode No.	First Code No.	Second Code No.	Setting
11(21)	3	01	Heat Pump lockout mode
		03	Auxiliary electric heater + Heat Pump lockout mode

01: When the heating capacity of the heat pump is insufficient during heating, the heat pump is stopped and heating operation is performed with an electrical heater. (It is switched by a hot-water heating instruction from the outdoor unit.)

03: If heating is insufficient in heat pump system alone, an electrical heater is used as the auxiliary electric heater.

Electrical Heater Step Setting

Mode No.	First Code No.	Second Code No.	Setting
11(21)	5	01	With heater
		03	Without heater

01: Controls ON/OFF of the heater in accordance with the thermostat step.

03: Without heater

Fan Speed Changeover when Thermostat is OFF

By setting to “Set Fan Speed,” you can switch the fan speed to the set fan speed when the heating thermostat is OFF.

∗ Since there is concern about draft if using “fan speed up when thermostat is OFF,” you should take the setup location into consideration.

On warming, the priority is given to this over "airflow OFF switch on thermostat OFF".

◎This is used to correspond with the improvement of the electrical collection capability.

Mode No.	First Code No.	Second Code No.	Setting
12(22)	3	01	LL Fan Speed
		02	Set Fan Speed

Auto Restart after Power Failure Reset

For the air conditioners with no setting for the function, the units will be left in the stop condition when the power supply is reset automatically after power failure reset or the main power supply is turned ON again after once turned OFF. However, for the air conditioners with the setting (same as factory setting), the units may start automatically after power failure reset or the main power supply turned ON again (return to the same operation condition as that of before power failure).

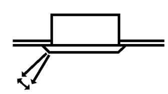
For the above reasons, when the unit is set enabling to utilize "Auto restart function after power failure reset", utmost care should be paid for the occurrence of the following situation.

Caution

1. **The air conditioner starts operation suddenly after power failure reset or the main power supply is turned ON again. This could be unexpected to the user and cause concern.**
2. **For example, during service work, turning OFF the main power switch while the unit is operating, and turning ON the switch again after the work is completed, starts unit operation (the fan rotates).**

Setting of Airflow Direction Adjustment Range

Make the following airflow direction setting according to the respective purpose.



Mode No.	First Code No.	Second Code No.	Setting
13 (23)	4	01	Upward (Draft prevention)
		02	Standard
		03	Downward (Ceiling soiling prevention)

2.3.3 Setting of Operation Control Mode from Remote Controller (Local Setting)

The operation control mode is compatible with a variety of controls and operations by limiting the functions of the operation remote controller. Furthermore, operations such as remote controller ON/OFF can be limited in accordance with the combination conditions. (Refer to information in the next page.)
The centralized controller is normally available for operations, except when the centralized monitor is connected.

2.3.4 Contents of Control Modes

20 modes consisting of combinations of the following 5 operation modes with temperature and operation mode setting by remote controller can be set and displayed by operation modes 0 through 19.

- ◆ ON/OFF control impossible by remote controller
  Used when you want to turn ON/OFF by centralized remote controller only.
  (Cannot be turned ON/OFF by remote controller.)
- ◆ OFF control only possible by remote controller
  Used when you want to turn ON by centralized remote controller only, and OFF by remote controller only.
- ◆ Centralized
  Used when you want to turn ON by centralized remote controller only, and turn ON/OFF freely by remote controller during set time.
- ◆ Individual
  Used when you want to turn ON/OFF by both centralized remote controller and remote controller.
- ◆ Timer operation possible by remote controller
  Used when you want to turn ON/OFF by remote controller during set time and you do not want to start operation by centralized remote controller when time of system start is programmed.

How to Select Operation Mode

Whether operation by remote controller will be possible or not for turning ON/OFF, controlling temperature or setting operation mode is selected and decided by the operation mode given on the right edge of the table below.

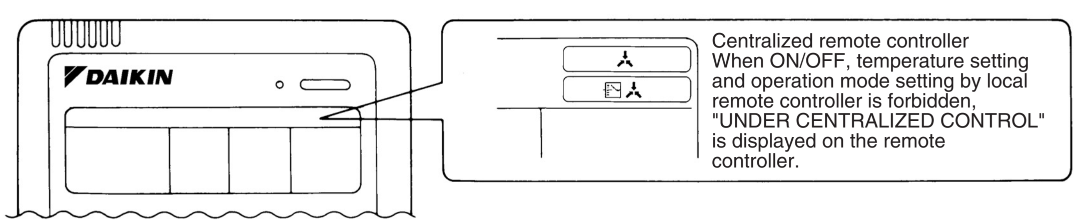
Example

ON by remote controller (Unified ON by centralized remote controller)	OFF by remote controller (Unified OFF by centralized remote controller)	OFF by remote controller	Temperature control by remote controller	Operation mode setting by remote controller	⇨ Control mode is "1."
↓	↓	↓	↓	↓	
Rejection	Rejection	Rejection	Acceptance	Acceptance	

Control mode	Control by remote controller					Control mode
	Operation		OFF	Temperature control	Operation mode setting	
	Unified operation, individual operation by centralized remote controller, or operation controlled by timer	Unified OFF, individual stop by centralized remote controller, or timer stop				
ON/OFF control impossible by remote controller	Rejection (Example)	Rejection (Example)	Rejection (Example)	Rejection	Acceptance	0
					Rejection	10
				Acceptance (Example)	Acceptance (Example)	1(Example)
					Rejection	11
OFF control only possible by remote controller			Acceptance	Rejection	Acceptance	2
					Rejection	12
				Acceptance	Acceptance	3
					Rejection	13
Centralized	Acceptance			Rejection	Acceptance	4
					Rejection	14
				Acceptance	Acceptance	5
					Rejection	15
Individual		Acceptance		Rejection	Acceptance	6
					Rejection	16
				Acceptance	Acceptance	7 *1
					Rejection	17
Timer operation possible by remote controller	Acceptance (During timer at ON position only)	Rejection (During timer at OFF position)		Rejection	Acceptance	8
					Rejection	18
				Acceptance	Acceptance	9
					Rejection	19

Do not select "timer operation possible by remote controller" if not using a remote controller. Operation by timer is impossible in this case.

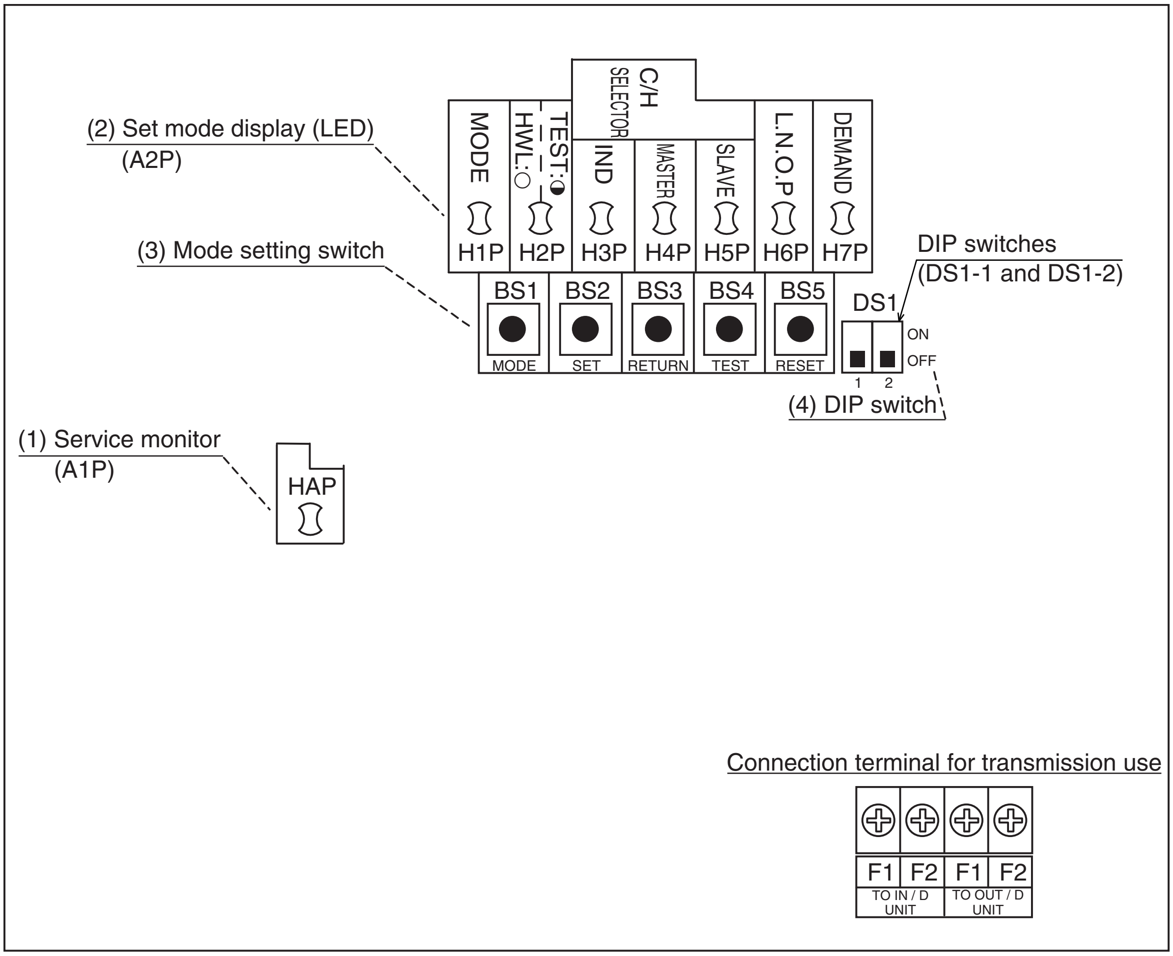
*1. Factory setting



3. Field Setting from Outdoor Unit

3.1 Location of DIP Switch and BS Button

Outdoor Unit PCB



(1) Service monitor (LED Green)
This LED blinks while in normal operation, and turns ON or OFF when an error occurs.

(2) Set mode display (LED Orange)
LEDs display mode according to the setting.

(3) Mode setting switch
Used to change mode.

(4) DIP switch
Used to make field setting

3.2 Setting by DIP Switches

The following field settings are made by DIP switches on PCB.

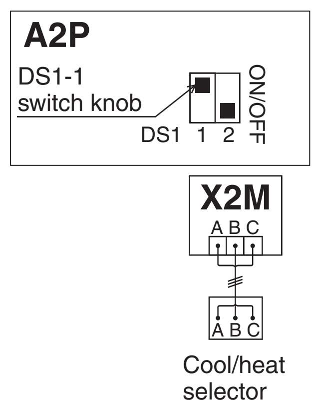
DIP switch		Setting item	Description
No.	Setting		
DS1-1	ON	Cool/Heat changeover setting	Used to set cool/heat changeover setting by remote controller equipped with outdoor unit. (Note 1)
	OFF (Factory setting)		
DS1-2	ON	Not used	Do not change the factory settings.
	OFF (Factory setting)		

Cool/heat selector connection procedure

- Set the remote controller only when changing over the operation mode between cooling and heating using the remote controller installed in the outdoor.

① Connect the cool/heat selector (optional accessory) to the terminals (A, B and C) on the outdoor X2M Terminal board (A, B and C).

② Set the cool/heat selector switch DS1-1 from "OFF" (which is selected at the factory before shipment) to "ON".

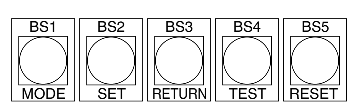


3.3 Setting by BS Buttons

The following settings are made by BS buttons on PCB.

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
LED display	●	●	○	●	●	●	●

(Factory setting)



There are the following 3 setting modes.

(1) Setting mode 1 (H1P OFF)

Initial status (when normal) : Also indicates during "abnormal".

(2) Setting mode 2 (H1P ON)

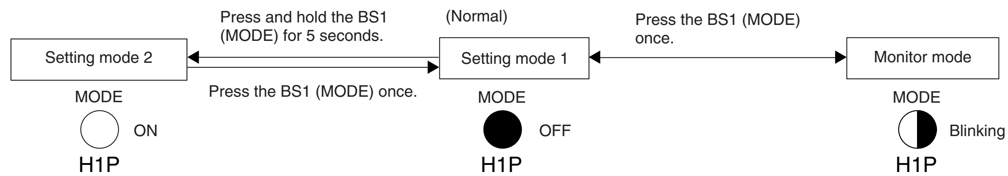
Used to modify the operating status and to set program addresses, etc. Usually used in servicing the system.

(3) Monitor mode (H1P blinks)

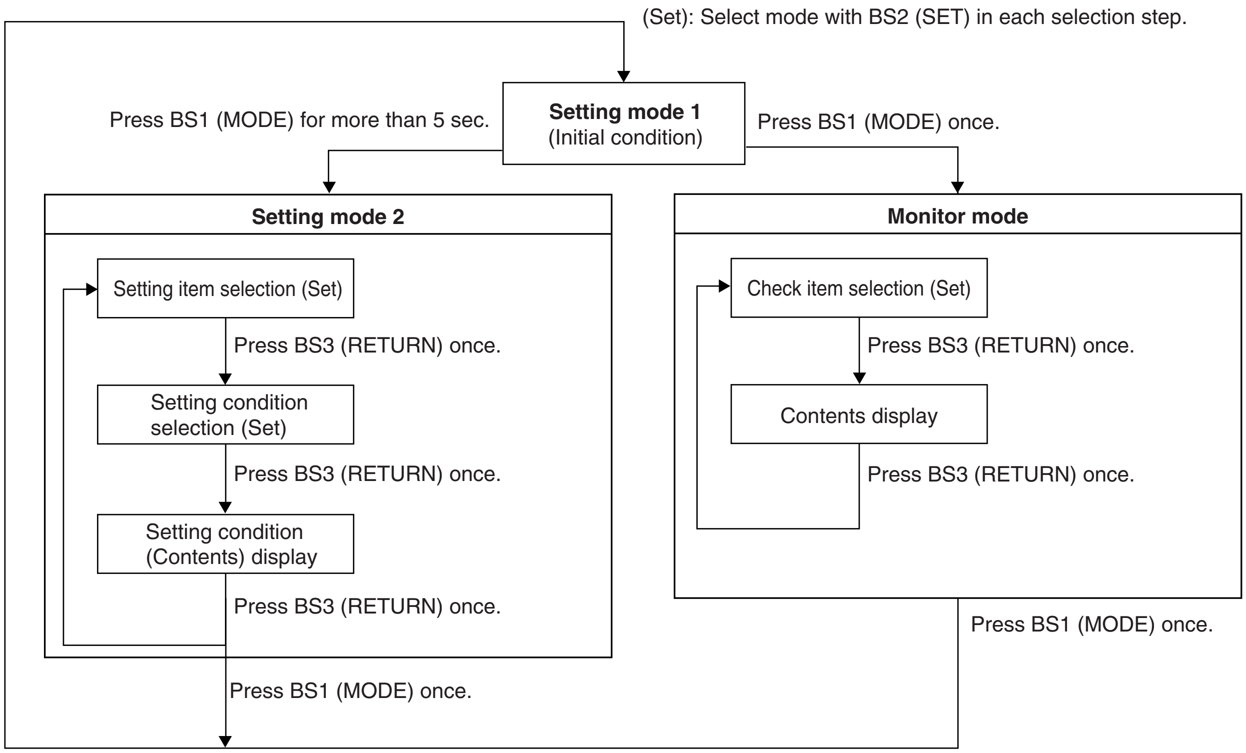
Used to check the program made in Setting mode 2.

■ Mode changing procedure

Using the MODE button, the modes can be changed as follows.



■ Mode changing procedure



3.4 Setting Mode 1

This mode is used to set and check the current operating conditions (Normal / Abnormal / In check operation)

Normally, “Setting mode 1” is set. In case of other status, press MODE button (BS1) once and set to “Setting mode 1”.

↓

∗ The current state is displayed.

Display for error / preparing / test-run

Setting (displaying) item	LED display example						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Normal	●	●	○	●	●	●	●
Error	●	○	○	●	●	●	●
Preparing/Test-run	●	◑	○	●	●	●	●

○: ON ●: OFF ◑: Blink

H2P → Current operating conditions
● Normal ○ Abnormal
◑ In preparation or in check operation

3.5 Setting Mode 2

Press and hold the MODE button (BS1) for 5 seconds and set to “Setting mode 2”.

↓

<Selection of setting items>

Press the SET button (BS2) and set the LED display to a setting item shown in the table on the right.

↓

Press the RETURN button (BS3) and decide the item. (The present setting condition is blinked.)

↓

<Selection of setting conditions>

Press the SET button (BS2) and set to the setting condition you want.

↓

Press the RETURN button (BS3) and decide the condition.

↓

Press the RETURN button (BS3) and set to the initial status of “Setting mode 2”.

∗ If you become unsure of how to proceed, press the MODE button (BS1) and return to setting mode 1.

No.	Setting item	Description
5	Indoor unit forced fan H	Allows forced operation of indoor unit fan while unit is stopped. (H tap)
6	Indoor unit forced operation	Allows forced operation of indoor unit.
8	Te setting	Target evaporation temperature for cooling
9	Tc setting	Target condensation temperature for heating
10	Defrost changeover setting	Changes the temperature condition for defrost and sets to quick defrost or slow defrost.
12	External low noise setting / Demand setting	Reception of external low noise or demand signal
16	Setting of hot water heater	Make this setting to conduct heating operation with hot water heater.
21	Refrigerant recovery / vacuuming mode setting	Sets to refrigerant recovery / vacuuming mode.
22	Low night noise operation setting	Sets automatic low night noise operation in a simple way. The operating time is based on “Starting set” and “Ending set”.
26	Low night noise operation start setting	Sets starting time of low night noise operation. (Low night noise operation setting is also required.)
27	Low night noise operation end setting	Sets ending time of low night noise operation. (Low night noise setting is also required.)
29	Capacity priority setting	If the capacity control is required, the low noise control is automatically released by this setting during carrying out low noise operation and nighttime low noise operation.
30	Demand setting 1	Changes target value of power consumption when demand control 1 is input.
32	Normal demand setting	Normally enables demand control 1 without external input. (Effective to prevent a problem that circuit breaker of small capacity is shut down due to large load.

○: ON ●: OFF ◑: Blink

No.	Setting item	MODE H1P	TEST H2P	C/H selection IND H3P	C/H selection Master H4P	C/H selection Slave H5P	Low noise H6P	Demand H7P	Setting condition display		* Factory setting
5	Indoor unit forced fan H	○	●	●	●	○	●	○	Normal operation	○●●●●●○	*
									Indoor forced fan H	○●●●●○●	
6	Indoor unit forced operation	○	●	●	●	○	○	●	Normal operation	○●●●●●○	*
									Indoor forced operation	○●●●●○●	
8	Te setting	○	●	●	○	●	●	●	High	○●●●○●●	
									Normal	○●●●●○●	*
									Low	○●●●●●○	
9	Tc setting	○	●	●	○	●	●	○	High	○●●●○●●	
									Normal	○●●●●○●	*
									Low	○●●●●●○	
10	Defrost changeover setting	○	●	●	○	●	○	●	Quick defrost	○●●●○●●	
									Normal	○●●●●○●	*
									Slow defrost	○●●●●●○	
12	External low noise setting / Demand setting	○	●	●	○	○	●	●	External low noise/demand: NO	○●●●●●○	*
									External low noise/demand: YES	○●●●●○●	
16	Setting of hot water heater	○	●	○	●	●	●	●	OFF	○●●●●●○	*
									ON	○●●●●○●	
21	Refrigerant recovery / vacuuming mode setting	○	●	○	●	○	●	○	Refrigerant recovery/ vacuuming: OFF	○●●●●●○	*
									Refrigerant recovery/ vacuuming: ON	○●●●●○●	
22	Low night noise operation setting	○	●	○	●	○	○	●	OFF	○●●●●●●	*
									Level 1	○●●●●●○	
									Level 2	○●●●●○●	
									Level 3	○●●●●○○	
26	Low night noise operation start setting	○	●	○	○	●	○	●	About PM 8:00	○●●●●●○	
									About PM 10:00	○●●●●○●	*
									About PM 0:00	○●●●○●●	
27	Low night noise operation end setting	○	●	○	○	●	○	○	About AM 6:00	○●●●●●○	
									About AM 7:00	○●●●●○●	
									About AM 8:00	○●●●○●●	*
29	Capacity priority setting	○	●	○	○	○	●	○	OFF	○●●●●●○	*
									ON	○●●●●○●	
30	Demand setting 1	○	●	○	○	○	○	●	60 % demand	○●●●●●○	
									70 % demand	○●●●●○●	*
									80 % demand	○●●●○●●	
32	Normal demand setting	○	○	●	●	●	●	●	OFF	○●●●●●○	*
									ON	○●●●●○●	

3.6 Monitor Mode

○: ON ●: OFF ◑: Blink

To enter the monitor mode, press the MODE button (BS1) when in "Setting mode 1".

↓

<Selection of setting item>

Press the SET button (BS2) and set the LED display to a setting item.

↓

<Confirmation on setting contents>

Press the RETURN button (BS3) to display different data of set items.

↓

Press the RETURN button (BS3) and switches to the initial status of "Monitor mode".

∗ Press the MODE button (BS1) and returns to "Setting mode 1".

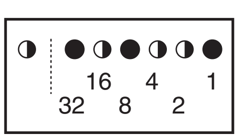
No.	Setting item	LED display H1P	H2P	H3P	H4P	H5P	H6P	H7P	Data display
0	Various settings	◑	●	●	●	●	●	●	See below
5	Number of connected indoor units	◑	●	●	●	○	●	○	Lower 6 digits
14	Contents of error (the latest)	◑	●	●	○	○	○	●	Error code table
15	Contents of error (1 cycle before)	○	●	●	○	○	○	○	
16	Contents of error (2 cycle before)	○	●	○	●	●	●	●	
20	Contents of retry (the latest)	○	●	○	●	○	●	●	
21	Contents of retry (1 cycle before)	○	●	○	●	○	●	○	
22	Contents of retry (2 cycle before)	○	●	○	●	○	○	●	

Setting item 0 Display contents of "Various settings"

Defrost select setting	Short	◑	●	●	●	○	●	●
	Medium	◑	●	●	●	◑	●	●
	Long	◑	●	●	●	●	●	●
Te setting	H	◑	●	●	●	●	○	●
	M	◑	●	●	●	●	◑	●
	L	◑	●	●	●	●	●	●
Tc setting	H	◑	●	●	●	●	●	○
	M	◑	●	●	●	●	●	◑
	L	◑	●	●	●	●	●	●

Press the SET button and match with the LEDs No. 1 - 15, press the RETURN button, and enter the data for each setting.

∗ Data such as addresses and number of units is expressed as binary numbers; the 2 ways of expressing are as follows:



The No. 5 cool/heat unified address is expressed as a binary number consisting of the lower 6 digits. (0 - 63)

In ① the address is 000110 (binary number), which translates to 4 + 2 = 6 (base 10 number). In other words, the address is 6.

3.7 Detailed Explanation of Setting Modes

3.7.1 Cool / Heat Mode Switching

The Cool / Heat Mode switching is carried out by remote controller fitted to indoor unit.
This setting is not required for normal operation. (Factory setting)

3.7.2 Setting of Low Noise Operation and Demand Operation

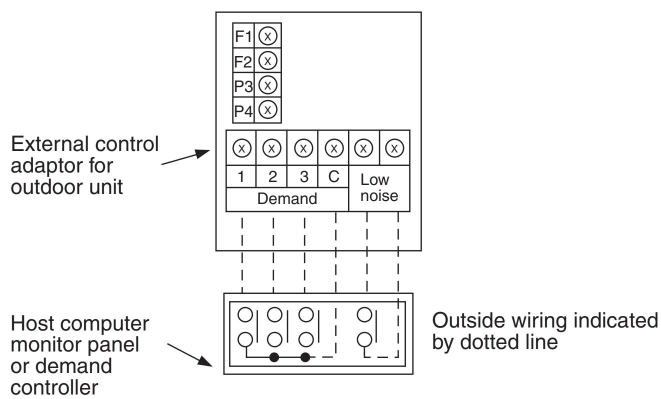
Setting of Low Noise Operation

By connecting the external contact input to the low noise input of the outdoor unit external control adaptor (optional), you can lower operating noise by 2-3 dB.

Setting	Content
Mode 1	Set the outdoor unit fan to Step 6 or lower.
Mode 2	Set the outdoor unit fan to Step 5 or lower.
Mode 3	Set the outdoor unit fan to Step 4 or lower.

A. When the low noise operation is carried out by external contact (with the use of the external control adaptor for outdoor unit)

1. Connect external control adaptor for outdoor unit and short-circuit terminal of low noise (Refer below figure).
   If carrying out demand or low noise input, connect the adaptor's terminals as shown below.



2. While in "Setting mode 2", set the setting condition for set item No. 12 (Setting of external low noise/demand operation) to "YES".
3. If necessary, while in "Setting mode 2", select the setting condition (i.e., "Mode 1", "Mode 2", or "Mode 3") for set item No. 25 (Setting of external low noise level).
4. If necessary, while in "Setting mode 2", set the setting condition for the set item No. 29 (Setting of capacity precedence) to "ON".
   (If the condition is set to "ON", when the air conditioning load reaches a high level, the low noise operation command will be ignored to put the system into normal operation mode.)

B. When the low noise operation is carried out automatically at night (The external control adaptor for outdoor unit is not required)

1. While in "Setting mode 2", select the setting condition (i.e., "Mode 1", "Mode 2", or "Mode 3") for set item No. 22 (Setting of low night noise level).
2. If necessary, while in "Setting mode 2", select the setting condition (i.e., "20:00", "22:00", or "24:00") for set item No. 26 (Setting of start time of low night noise operation).
   (Use the start time as a guide since it is estimated according to outdoor air temperatures.)

3. If necessary, while in "Setting mode 2", select the setting condition (i.e., "06:00", "07:00", or "08:00") for set item No. 27 (Setting of end time of low night noise operation).
   (Use the end time as a guide since it is estimated according to outdoor air temperatures.)
4. If necessary, while in "Setting mode 2", set the setting condition for set item No. 29 (Setting of capacity precedence) to "ON".
   (If the condition is set to "ON", when the air conditioning load reaches a high level, the system will be put into normal operation mode even during nighttime.)

Image of operation in the case of A

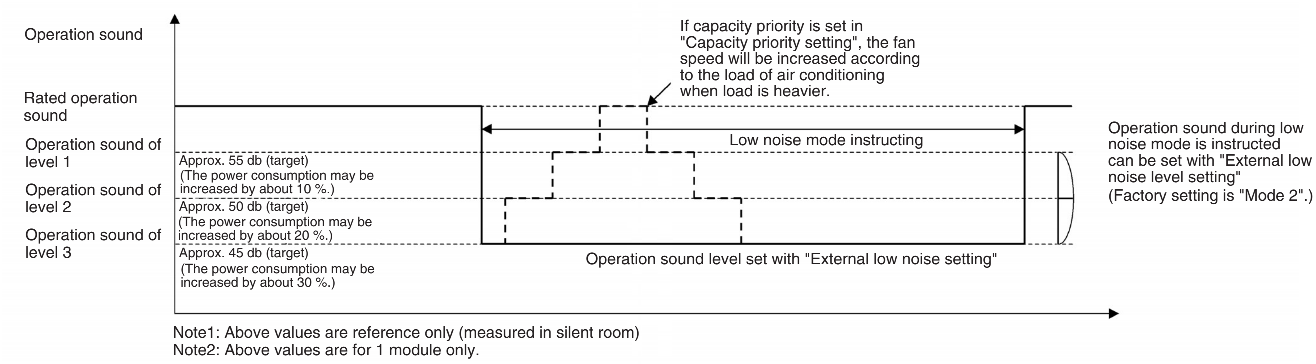


Image of operation in the case of B

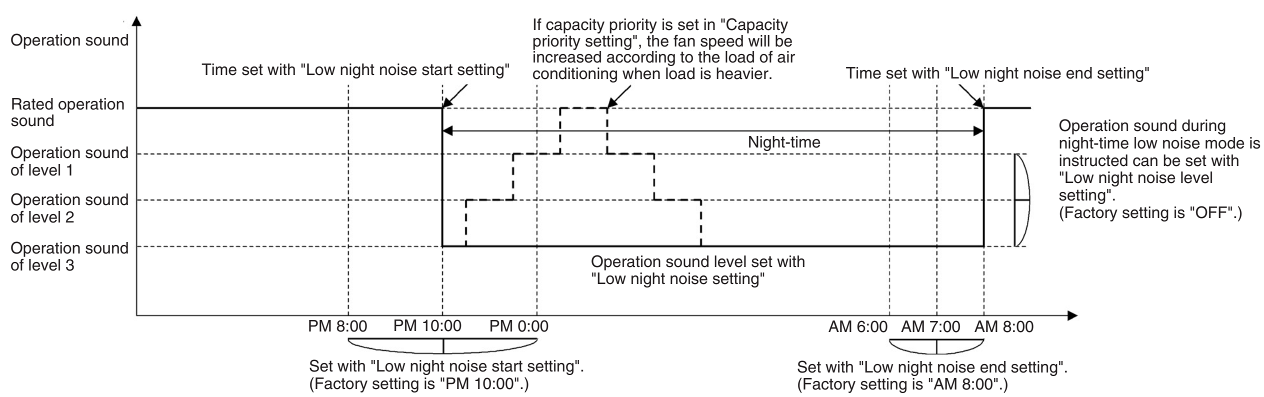
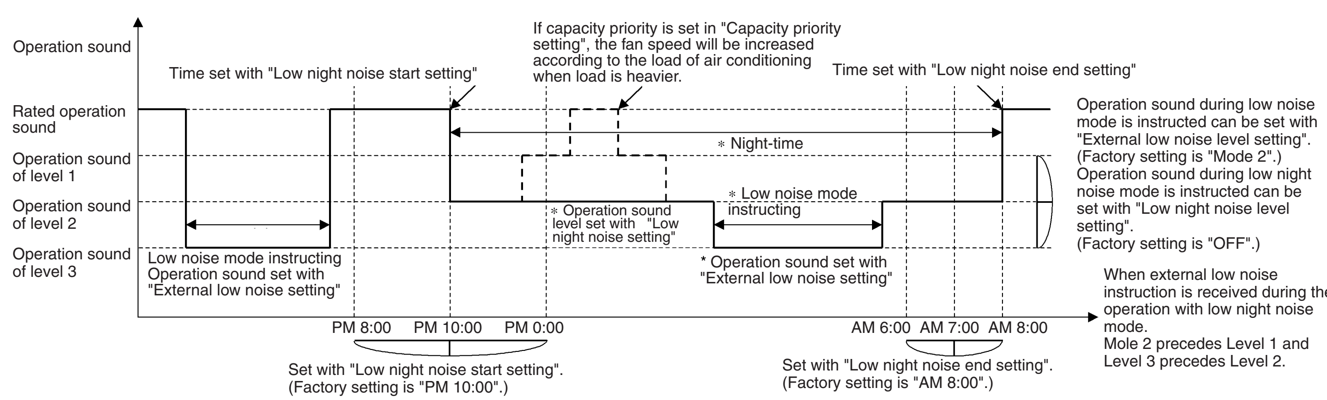


Image of operation in the case of A and B



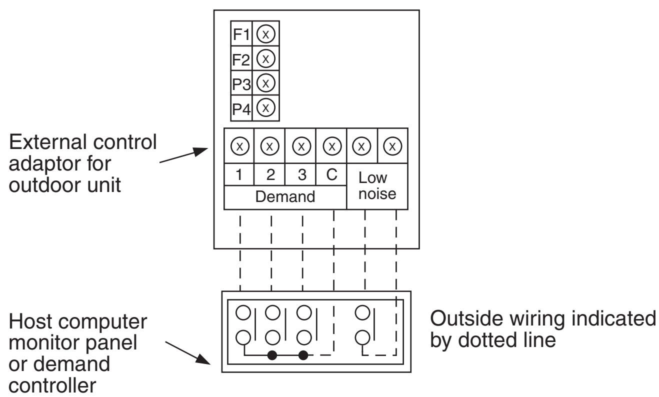
3.7.3 Setting of Demand Operation

By connecting the external contact input to the demand input of the outdoor unit external control adaptor (optional), the power consumption of unit operation can be saved suppressing the compressor operating condition.

Setting content			Setting method	
Set item	Condition	Content	External control adaptor	Outdoor unit PCB
Demand 1	Mode 1	The compressor operates at approx. 60% or less of rating.	Short circuit "1" and "C" on the terminal strip (TeS1).	Set item No. 32 to "Demand 1", and item No. 30 to "Level 1".
	Mode 2	The compressor operates at approx. 70% or less of rating.		Set item No. 32 to "Demand 1", and item No. 30 to "Level 2".
	Mode 3	The compressor operates at approx. 80% or less of rating.		Set item No. 32 to "Demand 1", and item No. 30 to "Level 3".
Demand 2	—	The compressor operates at approx. 40% or less of rating.	Short circuit "2" and "C".	Set item No. 32 to "Demand 2".
Demand 3	—	Forced thermostat OFF.	Short circuit "3" and "C".	—

∗: However the demand operation does not occur in the following operation modes.
① Startup control ② Oil return operation
③ Defrosting operation ④ Pump down residual operation

If carrying out demand or low noise input, connect the adaptor's terminals as shown below.



A. When the demand operation is carried out by external contact (with the use of the external control adaptor for outdoor unit).

1. Connect external control adaptor for outdoor unit and short-circuit terminals as required (Refer above figure).
2. While in "Setting mode 2", set the setting condition for set item No. 12 (Setting of external low noise/demand operation) to "YES".
3. If necessary, while in "Setting mode 2", select the set item No. 30 (Setting of Demand 1 level) and then set the setting condition to targeted mode.

B. When the normal demand operation is carried out. (Use of the external control adaptor for outdoor unit is not required.)

1. While in "Setting mode 2", make setting of the set item No. 32 (Setting of alternate demand) to "ON".
2. While in "Setting mode 2", select the set item No. 30 (Setting of Demand 1 level) and then set the setting condition to targeted mode.

Image of operation in the case of A

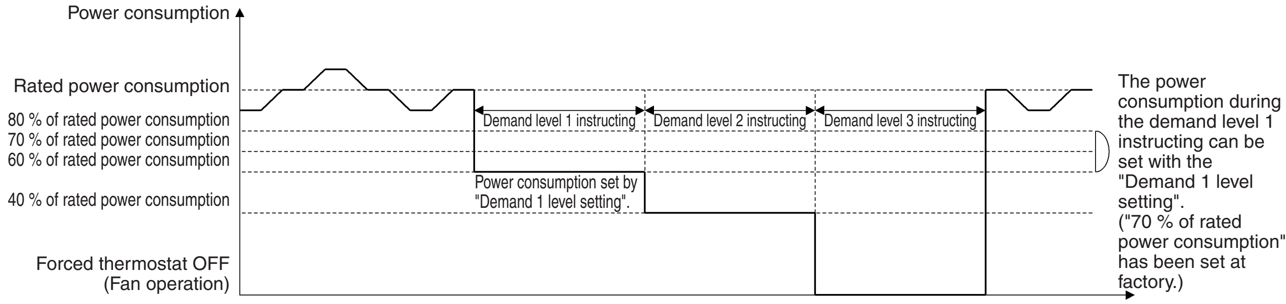


Image of operation in the case of B

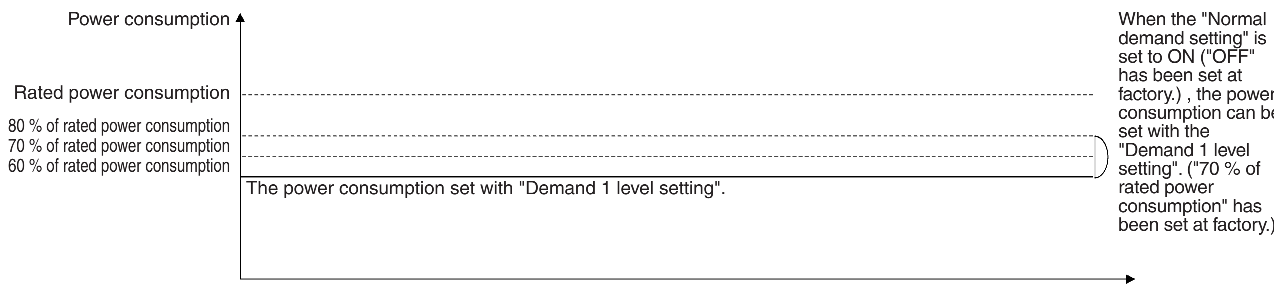
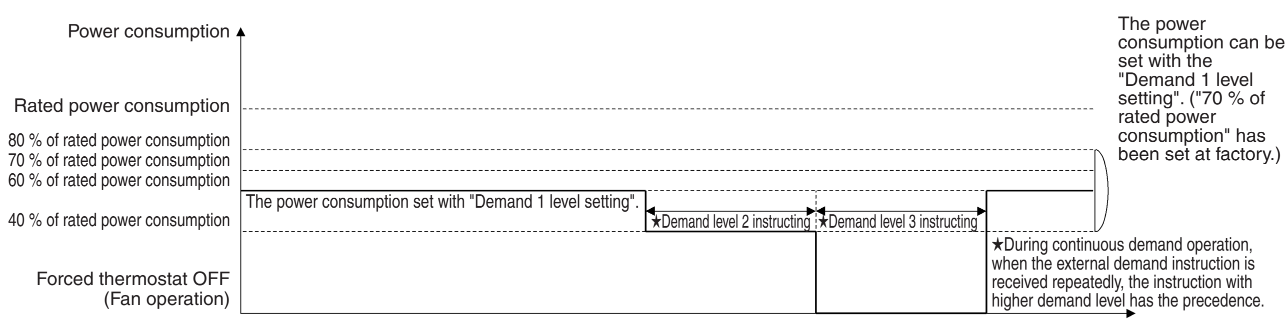


Image of operation in the case of A and B



Detailed Setting Procedure of Low Night Noise Operation and Demand Control

1. **Setting mode 1 (H1P OFF)**

(1) In setting mode 2, press the BS1 (MODE button) once. → Setting mode 1 is entered and H1P OFF.
During the setting mode 1 is displayed, “In low night noise operation” and “In demand control” are displayed.

2. **Setting mode 2 (H1P ON)**

(1) In setting 1, press and hold the BS1 (MODE button) for more than 5 seconds. → Setting mode 2 is entered and H1P lights.
(2) Press the BS2 (SET button) several times and match the LED display with the Setting No. you want.
(3) Press the BS3 (RETURN button) once, and the present setting content is displayed.
→ Press the BS2 (SET button) several times and match the LED display with the setting content (as shown on next page) you want.
(4) Press the BS3 (RETURN button) 2 times. → Returns to ①.
(5) Press the BS1 (MODE button) once. → Returns to the setting mode 1 and turns H1P OFF.

○: ON ●: OFF ◑: Blink

▭ : Factory setting (shown in **bold** below)

Setting No.	Setting contents	(1) Setting No. indication H1P	H2P	H3P	H4P	H5P	H6P	H7P	(2) Setting No. indication H1P	H2P	H3P	H4P	H5P	H6P	H7P	Setting contents	(3) Setting contents indication (Initial setting) H1P	H2P	H3P	H4P	H5P	H6P	H7P
12	External low noise / Demand setting	○	●	●	●	●	●	●	○	●	●	○	○	●	●	**NO**	○	●	●	●	●	●	◑
																YES	○	●	●	●	●	◑	●
22	Low night noise operation setting								○	●	○	●	○	○	●	**OFF**	○	●	●	●	●	●	●
																Mode 1	○	●	●	●	●	●	◑
																Mode 2	○	●	●	●	●	◑	●
																Mode 3	○	●	●	●	●	◑	◑
26	Low night noise operation start setting								○	●	○	○	●	○	●	PM 8:00	○	●	●	●	●	●	◑
																PM 10:00	○	●	●	●	●	◑	●
																PM 0:00	○	●	●	●	◑	●	●
27	Low night noise operation end setting								○	●	○	○	●	○	○	AM 6:00	○	●	●	●	●	●	◑
																AM 7:00	○	●	●	●	●	◑	●
																AM 8:00	○	●	●	●	◑	●	●
29	Capacity priority setting								○	●	○	○	○	●	○	**Low noise precedence**	○	●	●	●	●	●	◑
																Capacity precedence	○	●	●	●	●	◑	●
30	Demand setting 1								○	●	○	○	○	○	●	60 % of rated power consumption	○	●	●	●	●	●	◑
																70 % of rated power consumption	○	●	●	●	●	◑	●
																80 % of rated power consumption	○	●	●	●	◑	●	●
32	Normal demand setting								○	○	●	●	●	●	●	**OFF**	○	●	●	●	●	●	◑
																ON	○	●	●	●	●	◑	●

Setting mode indication section (H1P of (1)) — Setting No. indication section (H2P–H7P of (2)) — Set contents indication section (shaded cells of (3))

3.7.4 Setting of Refrigerant Recovery Mode

When carrying out the refrigerant collection on site, fully open the respective electronic expansion valve of indoor and outdoor units.
Both the outdoor unit and the indoor unit are forbidden to operation.

[Operation procedure]

(1) In **setting mode 2** with units in stop mode, set “Refrigerant Recovery / Vacuuming mode” to ON. The respective electronic expansion valve of indoor and outdoor units are fully opened. (H2P turns to display “TEST OPERATION” (blinks), “TEST OPERATION” and “UNDER CENTRALIZED CONTROL” are displayed on the remote controller, and the operation is prohibited.
(2) Collect the refrigerant using a refrigerant recovery unit. (See the instruction attached to the refrigerant recovery unit for more detail.)
(3) Press Mode button “BS1” once and reset “Setting Mode 2”.

3.7.5 Setting of Vacuuming Mode

In order to perform vacuuming operation at site, fully open the electronic expansion valves of indoor and outdoor units to turn on some solenoid valves.
Both the outdoor unit and the indoor unit are forbidden to operation.

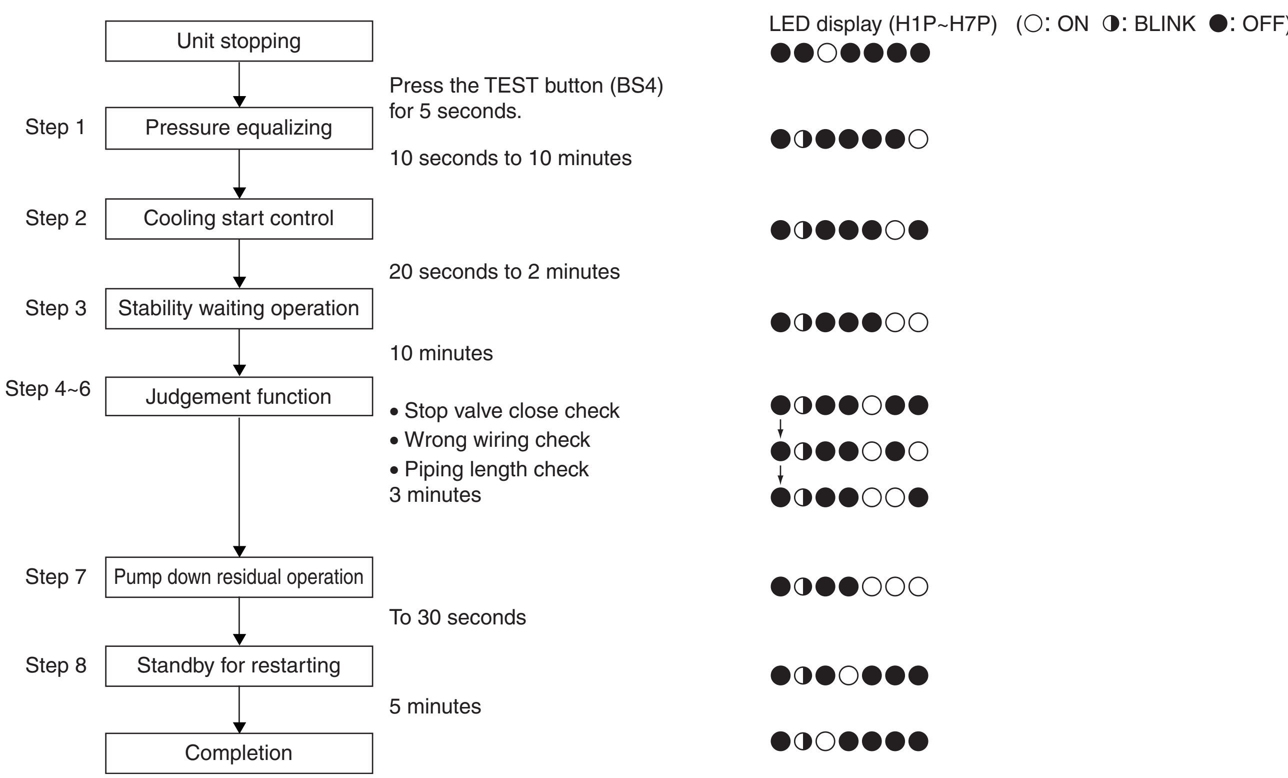
[Operating procedure]

(1) With **Setting Mode 2** while the unit stops, set “Refrigerant recovery / Vacuuming mode” to ON. The electronic expansion valves of indoor and outdoor units fully open and some of solenoid valves open.
(H2P blinks to indicate the test operation, and the remote controller displays “TEST OPERATION” and “UNDER CENTRALIZED CONTROL”, thus prohibiting operation.)
After setting, do not cancel “Setting Mode 2” until completion of Vacuuming operation.
(2) Use the vacuum pump to perform vacuuming operation.
(3) Press Mode button “BS1” once and reset “Setting Mode 2”.

3.7.6 Check Operation

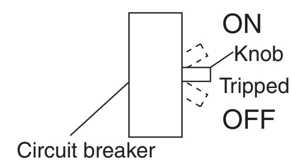
To prevent any trouble in the period of installation at site, the system is provided with a test operation mode enabling check for incorrect wiring, stop valve left in closed, and judgement of piping length.

CHECK OPERATION FUNCTION



Part 6 Service Diagnosis

1. Symptom-based Troubleshooting

	Symptom		Supposed Cause	Countermeasure
1	The system does not start operation at all.		Blowout of fuse(s)	Turn OFF the power supply and then replace the fuse(s).
			Cutout of breaker(s)	• If the knob of any breaker is in its OFF position, turn ON the power supply. • If the knob of any circuit breaker is in its tripped position, do not turn ON the power supply. 
2	The system starts operation but makes an immediate stop.		Blocked air inlet or outlet of indoor or outdoor unit	Remove obstacle(s).
			Clogged air filter(s)	Clean the air filter(s).
3	The system does not cool or heat air well.		Blocked air inlet or outlet of indoor or outdoor unit	Remove obstacle(s).
			Clogged air filter(s)	Clean the air filter(s).
			Enclosed outdoor unit(s)	Remove the enclosure.
			Improper set temperature	Set the temperature to a proper degree.
			Airflow rate set to "LOW"	Set it to a proper airflow rate.
			Improper direction of air diffusion	Set it to a proper direction.
			Open window(s) or door(s)	Shut it tightly.
		[In cooling]	Direct sunlight received	Hang curtains or shades on windows.
		[In cooling]	Too many persons staying in a room	The model must be selected to match the air conditioning load.
		[In cooling]	Too many heat sources (e.g. OA equipment) located in a room	
4	The system does not operate.	The system stops and immediately restarts operation.	If the OPERATION lamp on the remote controller turns ON, the system will be normal. These symptoms indicate that the system is controlled so as not to put unreasonable loads on the system.	Normal operation. The system will automatically start operation after a lapse of 5 minutes.
		Pressing the TEMP ADJUST button immediately resets the system.		
		The remote controller displays "UNDER CENTRALIZED CONTROL", which blinks for a period of several seconds when the OPERATION button is depressed.	The system is controlled with centralized controller. Blinking display indicates that the system cannot be operated using the remote controller.	Operate the system using the COOL/HEAT centralized remote controller.
		The system stops immediately after turning ON the power supply.	The system is in preparation mode of micro-computer operation.	Wait for a period of approximately 1 minute.
5	The system makes intermittent stops.	The remote controller displays error codes "U4" and "U5", and the system stops but restarts after a lapse of several minutes.	The system stops due to an interruption in communication between units caused by electrical noises coming from equipment other than air conditioners.	Remove causes of electrical noises. If these causes are removed, the system will automatically restart operation.

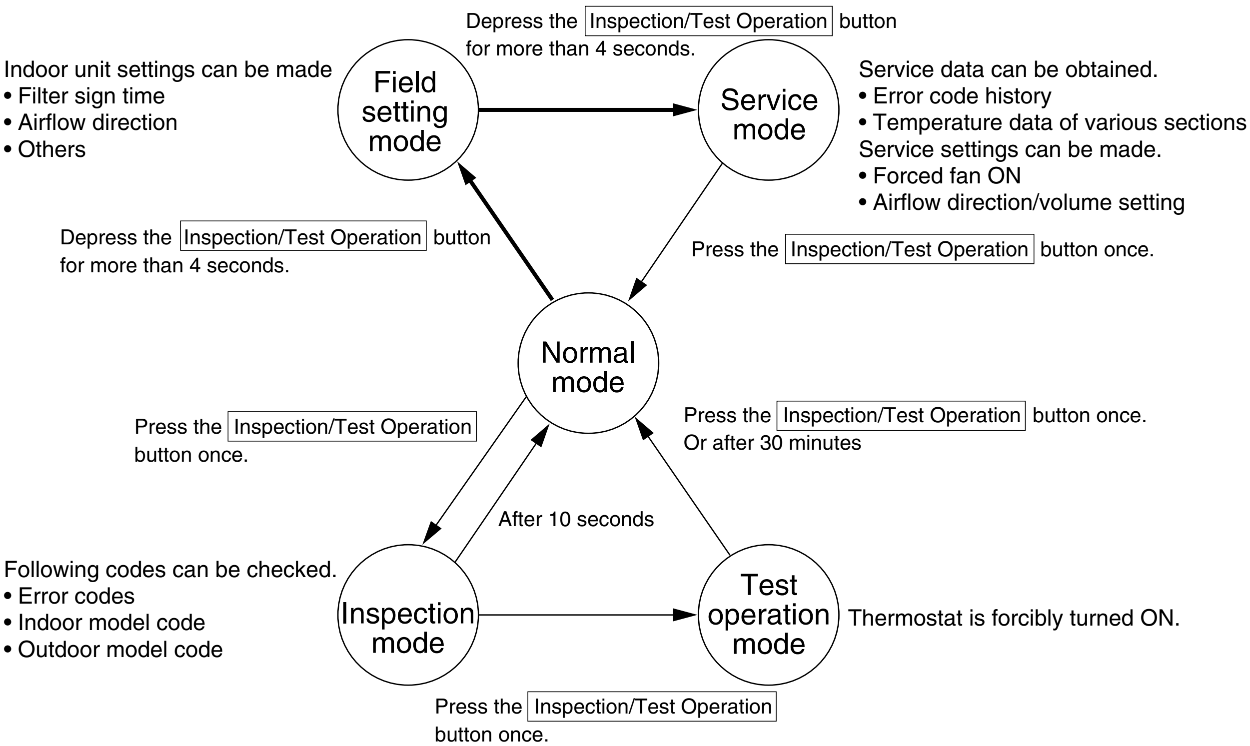
	Symptom		Supposed Cause	Countermeasure
6	COOL-HEAT selection is disabled.	The remote controller displays "UNDER CENTRALIZED CONTROL".	This remote controller has no option to select cooling operation.	Use a remote controller with option to select cooling operation.
		The remote controller displays "UNDER CENTRALIZED CONTROL", and the COOL-HEAT selection remote controller is provided.	COOL-HEAT selection is made using the COOL-HEAT selection remote controller.	Use the COOL-HEAT selection remote controller to select cool or heat.
7	The system conducts fan operation but not cooling or heating operation.	This symptom occurs immediately after turning ON the power supply.	The system is in preparation mode of operation.	Wait for a period of approximately 10 minutes.
8	The airflow rate is not reproduced according to the setting.	Even pressing the AIRFLOW RATE SET button makes no changes in the airflow rate.	In heating operation, when the room temperature reaches the set degree, the outdoor unit will stop while the indoor unit is brought to fan LL operation so that no one gets cold air. (The fan LL operation is also enabled while in oil return mode in cooling operation.)	Normal operation.
9	The airflow direction is not reproduced according to the setting.	The airflow direction is not corresponding to that displayed on the remote controller. The flap does not swing.	Automatic control	Normal operation.
10	A white mist comes out from the system.	<Indoor unit> In cooling operation, the ambient humidity is high. (This indoor unit is installed in a place with much oil or dust.)	Uneven temperature distribution due to heavy stain of the inside of the indoor unit	Clean the inside of the indoor unit.
		<Indoor unit> Immediately after cooling operation stopping, the outdoor air temperature and humidity are low.	Hot gas (refrigerant) flown in the indoor unit results to be vapor from the unit.	Normal operation.
		<Indoor and outdoor units> After the completion of defrosting operation, the system is switched to heating operation.	Defrosted moisture turns to be vapor and comes out from the units.	Normal operation.

	Symptom		Supposed Cause	Countermeasure
11	The system produces sounds.	<Indoor unit> Immediately after turning ON the power supply, indoor unit produces "ringing" sounds.	These are operating sounds of the electronic expansion valve of the indoor unit.	Normal operation. This sound becomes low after a lapse of approximately 1 minute.
		<Indoor and outdoor units> "Hissing" sounds are continuously produced while in cooling or defrosting operation.	These sounds are produced from gas (refrigerant) flowing respectively through the indoor and outdoor units.	Normal operation.
		<Indoor and outdoor units> "Hissing" sounds are produced immediately after the startup or stop of the system, or the startup or stop of defrosting operation.	These sounds are produced when the gas (refrigerant) stops or changes flowing.	Normal operation.
		<Indoor unit> Faint sounds are continuously produced while in cooling operation or after stopping the operation.	These sounds are produced from the drain discharge device in operation.	Normal operation.
		<Indoor unit> "Creaking" sounds are produced while in heating operation or after stopping the operation.	These sounds are produced from resin parts expanding and contracting with temperature changes.	Normal operation.
		<Outdoor unit> Pitch of operating sounds changes.	The reason is that the compressor changes the operating frequency.	Normal operation.
12	Dust comes out from the system.	Dust comes out from the system when it restarts after the stop for an extended period of time.	Dust, which has deposited on the inside of indoor unit, is blown out from the system.	Normal operation.
13	Odors come out from the system.	In operation	Odors of room, cigarettes or else adsorbed to the inside of indoor unit are blown out.	The inside of the indoor unit should be cleaned.
14	Outdoor unit fan does not rotate.	In operation	The reason is that fan revolutions are controlled to put the operation to the optimum state.	Normal operation.
15	LCD display "88" appears on the remote controller.	Immediately after turning ON the power supply	The reason is that the system is checking to be sure the remote controller is normal.	Normal operation. This code is displayed for a period of approximately 1 minute at maximum.
16	The outdoor unit compressor or the outdoor unit fan does not stop.	After stopping operation	It stops in order to prevent oil or refrigerant from dwelling.	Normal operation. It stops after a lapse of approximately 5 to 10 minutes.
17	The outdoor unit gets hot.	While stopping operation	The reason is that the compressor is warmed up to provide smooth startup of the system.	Normal operation.
18	The system does not cool air well.	The system is in dry operation.	The reason is that the dry operation serves not to reduce the room temperature where possible.	Change the system to cooling operation.

2. Troubleshooting by Remote Controller

2.1 Mode ChangeOver

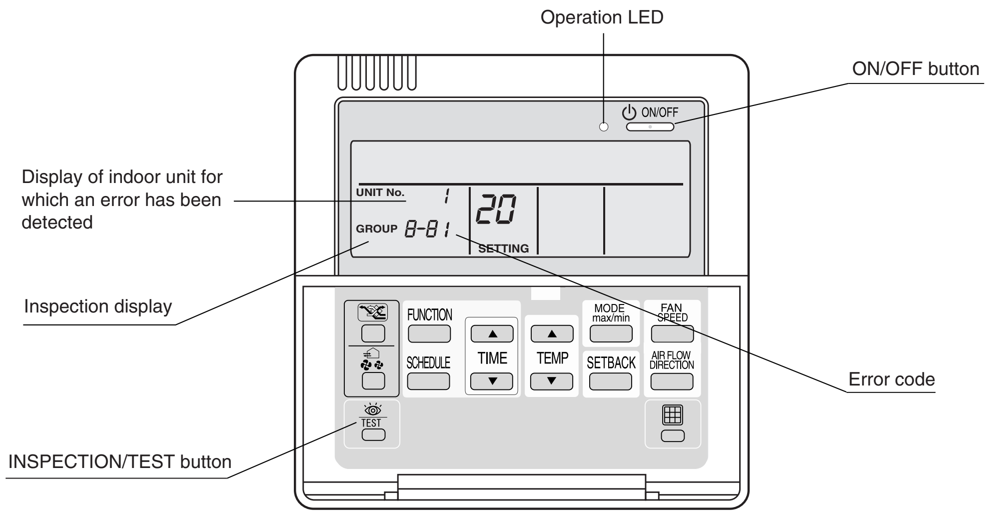
The following modes can be selected by using the [Inspection/Test Operation] button on the remote control.



2.2 Procedure of Self-diagnosis by Remote Controller

2.2.1 Wired Remote Controller — BRC1D71

If operation stops due to error, the remote controller’s operation LED blinks, and error code is displayed. (Even if stop operation is carried out, error contents are displayed when the inspection mode is entered.) The error code enables you to tell what kind of error caused operation to stop. Refer to P.103 for error code and error contents.

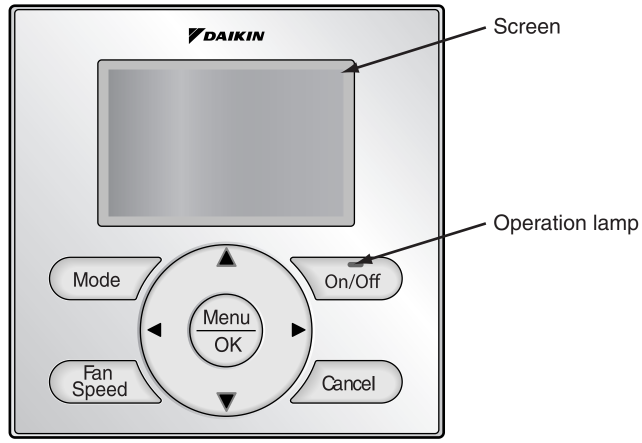


Note:

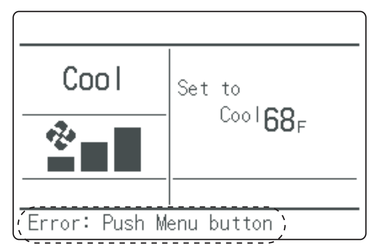
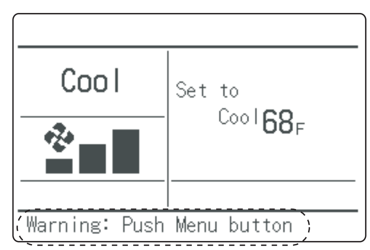
1. Pressing the INSPECTION/TEST button will blink the check indication.
2. While in check mode, pressing and holding the ON/OFF button for a period of 5 seconds or more will clear the failure history indication shown above. In this case, on the codes display, the error code will blink twice and then change to “00” (= Normal), the Unit No. will change to “0”, and the operation mode will automatically switch from check mode to normal mode (displaying the set temperature).

2.2.2 Wired Remote Controller — BRC1E71

The following will be displayed on the screen when an error (or a warning) occurs during operation.
Check the error code and take the corrective action specified for the particular model.



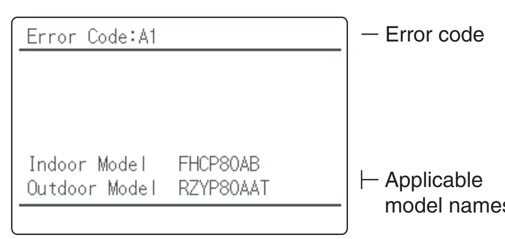
(1) Checking an error or warning

	Operation Status	Display	
Abnormal stop	The system stops operating.	The operation lamp (green) starts to blink. The message "Error: Push Menu button" will appear and blink at the bottom of the screen.	
Warning	The system continues its operation.	The operation lamp (green) remains on. The message "Warning: Push Menu button" will appear and blink at the bottom of the screen.	

(2) Taking corrective action

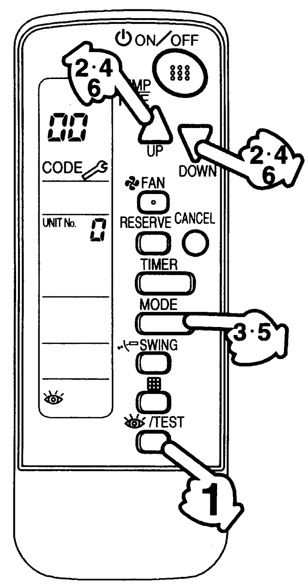
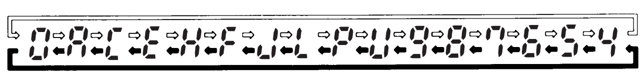
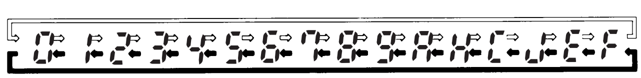
· Press the Menu/OK button to check the error code.

· Take the corrective action specific to the model.



2.2.3 Wireless Remote Controller

If unit stops due to an error, the operation indicating LED on the signal receiving part of indoor unit blinks. The error code can be determined by following the procedure described below. (The error code is displayed when an operation error has occurred. In normal condition, the error code of the last problem is displayed.)

1	Press the INSPECTION/TEST button to select “inspection”. The equipment enters the inspection mode. The “Unit” indication is displayed and the Unit No. display shows blinking “0” indication.	
2	Set the Unit No. Press the UP or DOWN button and change the Unit No. display until the buzzer (∗1) is generated from the indoor unit. ∗1 Number of beeps **3 short beeps:** Conduct all of the following operations. **1 short beep:** Conduct steps 3 and 4. Continue the operation in step 4 until a buzzer remains ON. The continuous buzzer indicates that the error code is confirmed. **Continuous beep:** No abnormality.	
3	Press the MODE selector button. The left “0” (upper digit) indication of the error code blinks.	
4	Error code upper digit diagnosis Press the UP or DOWN button and change the error code upper digit until the error code matching buzzer (∗2) is generated. ■ The upper digit of the code changes as shown below when the UP and DOWN buttons are pressed.  ⇨ **"UP" button** ⬅ **"DOWN" button** ∗2 Number of beeps **Continuous beep:** Both upper and lower digits matched. (Error code confirmed) **2 short beeps:** Upper digit matched. **1 short beep:** Lower digit matched.	
5	Press the MODE selector button. The right “0” (lower digit) indication of the error code blinks.	
6	Error code lower digit diagnosis Press the UP or DOWN button and change the error code lower digit until the continuous error code matching buzzer (∗2) is generated. ■ The lower digit of the code changes as shown below when the UP and DOWN buttons are pressed.  ⇨ **"UP" button** ⬅ **"DOWN" button**	

2.3 Error Codes and Description

	Error code	Contents of Error	Page Referred
Indoor Unit	A0	Error of External Protection Device	109
	A1	Indoor Unit PCB Abnormality	110
	A3	Drain Water Level System Abnormality	111
	A6	Indoor Unit Fan Motor Abnormality	113
	A7	Swing Flap Motor Abnormality / Lock	115
	A8	Abnormal Power Supply Voltage	117
	A9	Electronic Expansion Valve Coil Abnormality	118
	AF	Drain System Abnormality	120
	AJ	Capacity Setting Abnormality	121
	C1	Transmission Error between Indoor Unit PCB and Fan PCB	122
	C4	Heat Exchanger (Liquid pipe) Thermistor Abnormality	124
	C5	Heat Exchanger (Gas Pipe) Thermistor Abnormality	125
	C6	Combination Error between Indoor Unit PCB and Fan PCB	126
	C9	Suction Air Thermistor Abnormality	127
	CC	Humidity Sensor System Abnormality	128
	CJ	Room Temperature Thermistor in Remote Controller Abnormality	129
Outdoor Unit	E1	Outdoor Unit PCB Abnormality	130
	E3	High Pressure Abnormality	131
	E4	Actuation of Low Pressure Sensor	133
	E5	Inverter Compressor Motor Lock	135
	E7	Outdoor Unit Fan Motor Abnormality	137
	E9	Electronic Expansion Valve Coil Abnormality	138
	F3	Discharge Pipe Temperature Control Error	141
	F6	Refrigerant Overcharged	143
	H3	High Pressure Switch Abnormality	144
	H7	Outdoor Unit Fan Motor Signal Abnormality	145
	H9	Outdoor Air Thermistor Abnormality	146
	J3	Discharge Pipe Thermistor Abnormality	146
	J5	Suction Pipe Thermistor Abnormality	146
	J6	Outdoor Unit Heat Exchanger Thermistor Abnormality	146
	JA	High Pressure Sensor Abnormality	147
	JC	Low Pressure Sensor Abnormality	149
	L1	Outdoor Unit PCB Abnormality	151
	L4	Radiation Fin Temperature Rise	153
	L5	Momentary Overcurrent of Inverter Compressor	154
	L8	Electronic Thermal (Time Lag)	155
	L9	Inverter Startup Error	157
	LC	Transmission Error (between Control and Inverter PCB)	159
	P4	Radiation Fin Thermistor Abnormality	160
System	U0	Refrigerant Shortage	161
	U2	Power Supply Voltage Abnormality	162
	U3	Check Operation not Executed	164
	U4	Transmission Error (between Indoor Units and Outdoor Units)	165
	U5	Transmission Error (between Remote Controller and Indoor Unit)	168
	U8	Transmission Error (between Main and Sub Remote Controllers)	169
	UE	Transmission Error (between Centralized Remote Controller and Indoor Unit)	170
	UF	System is not Set yet	172

The system operates for error codes indicated in black squares, however, be sure to check and repair.

2.4 Error Codes - Sub Codes

If an error code like the one shown below is displayed when the navigation remote controller (BRC1E71) is in use, make a detailed diagnosis or a diagnosis of the relevant unit referring to the attached list of detailed error codes.

2.4.1 Indoor Unit

Error code	Troubleshooting	
	Description of error	Description of diagnosis
A6 - 01	Fan motor locked	A locked fan motor current has been detected. Turn the fan by hand to check for the connection of connectors.
A6 - 10	Fan overcurrent error	A fan motor overcurrent has been detected. Check for the connection of the connector between the fan motor and the PCB for the fan. If the connection is normal, replace the fan motor. If this still cannot solve the error, replace the PCB for the fan.
A6 - 11	Fan position detection error	An error in the detection of position of the fan motor. Check for the connection of the connector between the fan motor and the PCB for the fan. If the connection is normal, replace the fan motor. If this still cannot solve the error, replace the PCB for the fan.
AH - 03	Transmission error (between the self-cleaning decoration panel and the indoor unit) [when the self-cleaning decoration panel is mounted]	Check for the connection of the harness connector between the panel PCB and the indoor unit PCB.
AH - 04	Dust detection sensor error [when the self-cleaning decoration panel is mounted]	Check for the connections of the connector X12A on the panel PCB and the connectors X18A and X19A on the sensor PCB.
AH - 05	Dust collection sign error [when the self-cleaning decoration panel is mounted]	Check for clogging with dust at the dust collection port as well as in the brush unit, S-shaped pipe, and dust box. Furthermore, check for any stains of the light receiving and emitting parts of the infrared unit.
AH - 06	Air filter rotation error [when the self-cleaning decoration panel is mounted]	Check for anything getting in the way of rotating the filter (e.g. the filter comes off or the drive gear is clogged with foreign matters).
AH - 07	Damper rotation error [when the self-cleaning decoration panel is mounted]	The damper does not rotate normally. Check for any foreign matters around the damper and for the operation of the gear and limit switch.
AH - 08	Filter self-cleaning operation error [when the self-cleaning decoration panel is mounted]	The unit has not yet completed the filter self-cleaning operation even after the lapse of specified period of time. Check for any external noise, etc.
C6 - 01	Faulty combination of indoor unit PCB and fan PCB	A combination of indoor unit PCB and fan PCB is faulty. Check whether the capacity setting adaptor is correct and the type of the fan PCB is correct.

2.4.2 Outdoor Unit

Error code	Troubleshooting	
	Description of error	Description of diagnosis
E7 - 01	Fan motor lock	The fan motor has caused abnormal rotation. Check for the connection of the connector between the fan motor and the outdoor unit PCB. If the connection is normal, replace the fan motor. If this still cannot solve the error, replace the outdoor unit PCB.
L1 - 01	Instantaneous overcurrent error (while in startup operation)	Refer to the “L1” flow chart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
L1 - 02	Current sensor error in PCB	
L1 - 03	Current offset error	
L1 - 04	IGBT error	
L1 - 05	Jumper setting error	
L1 - 06	SP/MP-PAM overvoltage error	
L8 - 01	Electronic thermal 1 error	Overload current continues for a period of 260 seconds or more. This error is supposed to have resulted from excessive charging of refrigerant, damage caused to the compressor bearing, too high-pressure, etc.. Check and probe the cause.
L8 - 02	Electronic thermal 2 error	Overload current close to the locked current flowed in the thermal for a period of five seconds. This error is supposed to have resulted from closed stop valve, disconnected wire in the compressor motor, etc. Check and probe the cause.
L8 - 03	Drop in compressor revolutions	Compressor load has been increased after startup. This error is supposed to have resulted from instantaneous power failure, liquid back, etc. Check and probe the cause.
L8 - 04	Thunder detection error	Surges caused by thunder
L8 - 05	Inverter limiting current	Excessive limiting current is flowing in the inverter. This error is supposed to have resulted from failure to open the stop valve, excessive charging of refrigerant, clogging in the indoor unit filter stain in the indoor/outdoor unit heat exchanger etc.. Check and probe the cause.
L9 - 01	Stall prevention (current increase)	Overload current has been applied to start up the compressor. This error is supposed to have resulted from high startup differential pressure, liquid back, excessive compressor oil, abnormal compressor coil, seizure of the compressor shaft, etc. Check and probe the cause.
L9 - 02	Stall prevention (startup error)	The compressor has not completed startup operation. This error is supposed to have resulted from high startup differential pressure, liquid back, excessive compressor oil, abnormal compressor coil, seizure of the compressor shaft, faulty position detection circuit, etc.. Check and probe the cause.
LC - 01	Faulty wiring	Faulty transmission including that caused when the power supply turns ON. This error is supposed to have resulted from ① Defective wire connections around the PCB, ② faulty outdoor unit PCB, or ③ faulty fan motor. Check and probe the cause.
LC - 02	Faulty transmission between compressor and micro controller	There is an error in transmission between the compressor and the outdoor unit PCB. If the wire connections of the compressor are normal, check for the same of the outdoor unit PCB.
PJ - 01	Capacity setting not made	This is an outdoor unit PCB for repair, but has no capacity setting adaptor connected. Connect a correct capacity setting adaptor to the PCB.
PJ - 04	Faulty capacity setting	This error results from a mismatch of signals between the controller in the PCB and the inverter. Check whether the type of the PCB is correct and correct capacity setting adaptor is connected.

Error code	Troubleshooting	
	Description of error	Description of diagnosis
U0 - 02	Gas shortage - Outdoor unit (Factor 0)	This error results from a shortage of refrigerant. Refer to the "U0" Troubleshooting flow chart and make a diagnosis, and then take countermeasures.
U0 - 03	Gas shortage - Outdoor unit (Factor 1)	This error results from a shortage of refrigerant cause by gas leakage. Charge refrigerant up to the normal refrigerant amount.
U0 - 04	Gas shortage - Outdoor unit (Factor 2)	This error results from clogging caused somewhere in the refrigerant piping system. Check for a failure to open the stop valve and clogging in the refrigerant system.
U2 - 01	Power supply voltage error	This error is supposed to have resulted from under- or over-voltage of the power supply, or faulty voltage sensor in the PCB.
U2 - 02	Open phase of power supply	Check for any open phase of the power supply.
U2 - 03	Main circuit capacitor charge error	There is abnormal circuit current flowing in the PCB. If wire connections related to the PCB are normal, replace the outdoor unit PCB.
U2 - 04	SP/MP - PAM overvoltage error	There is overvoltage between SP/MP and PAM (Single phase). If wire connections related to the PCB are normal, replace the outdoor unit PCB.
UA - 01	Incorrect number of indoor units connected	This error will be displayed if the locally-set number of indoor units is different from the detected number of indoor unit.
UA - 02	Multiple master units detected	There are a number of indoor units with a remote controller connected. Connect the remote controller to only one indoor unit.
UA - 03	Excess indoor units connected	This error will be displayed if five or more indoor units are connected.
UA - 05	Indoor-Outdoor transmission error between slave 1 and outdoor unit	There is an error in transmission between the outdoor unit and slave indoor unit 1. Check for the connection of the jumper between the slave indoor unit (with no remote controller connected) and the outdoor unit.
UA - 07	Indoor-Outdoor transmission error between slave 2 and outdoor unit	There is an error in transmission between the outdoor unit and slave indoor unit 2. Check for the connection of the jumper between the slave indoor unit (with no remote controller connected) and the outdoor unit.
UA - 09	Indoor-Outdoor transmission error between slave 3 and outdoor unit	There is an error in transmission between the outdoor unit and slave indoor unit 3. Check for the connection of the jumper between the slave indoor unit (with no remote controller connected) and the outdoor unit.
UF - 01	Incorrect wiring	There is an error in wire connections for transmission between indoor and outdoor units (judged with the indoor unit). Check for the connections of jumpers 1, 2, and 3 between the indoor and outdoor units.
UF - 02	Piping connected the other way round	There is an error in operation mode and refrigerant piping detection temperature. Check for any refrigerant piping connected the other way round, shortage of refrigerant, etc.

2.5 Error Code Indication by Outdoor Unit PCB

<Monitor mode>

To enter the monitor mode, press the MODE (BS1) button when in “Setting mode 1”.

↓

<Selection of setting item>

Press the SET (BS2) button and set the LED display to a setting item.

↓

<Confirmation of error 1>

Press the RETURN (BS3) button once to display "First digit" of error code.

↓

<Confirmation of error 2>

Press the SET (BS2) button once to display "Second digit" of error code.

↓

<Confirmation of error 3>

Press the SET (BS2) button once to display "error location".

(Confirmation of error 1 to 3: Detail description on next page.)

↓

<Confirmation of error 4>

Press the SET (BS2) button once to display "master or slave 1 or slave 2" and "error location".

↓

Press the RETURN (BS3) button and switches to the initial status of “Monitor mode”.

∗ Press the MODE (BS1) button and returns to “Setting mode 1”.

Contents of Error		Error code
In-phase error of DIII-Net	Detection of DIII-Net	E1
Discharge pressure Abnormality	HPS activated	E3
Suction pressure Abnormality	Pe abnormality	E4
Compressor lock	Detection of INV. compressor lock	E5
Overload, overcurrent	Detection of DC fan 1 motor lock	E7
Electronic expansion valve abnormality	EV1	E9
Defective sensor of outdoor air temperature	Defective Ta sensor (short)	H9
Discharge pipe temperature abnormality	Td abnormality	F3
Heat exchanger temperature abnormality	Refrigerant overcharge	F6
Defective sensor of discharge pipe temperature	Defective Tdi sensor (short)	J3
Defective sensor of suction pipe temperature	Defective Ts1 sensor (short)	J5
	Defective Ts2 sensor (short)	
Defective sensor of heat exchanger temperature	Defective Tb sensor (short)	J6
Defective sensor of discharge	Defective Pc sensor (short)	JA
Defective sensor of suction pressure	Defective Pe sensor (short)	JC
Defective Inverter PCB	Defective IPM	L1
	Current sensor offset abnormality	
	IGBT abnormality	
	Defective Current sensor	
	SP-PAM overvoltage abnormality	
Inverter radiation fin temperature rising	Over heating of inverter radiation fin temperature	L4
DC output overcurrent	Inverter instantaneous overcurrent	L5
Electronic thermal	Electronic thermal switch 1	L8
	Electronic thermal switch 2	
	Out-of-step	
	Speed down after startup	
	Lightening detection	
Stall prevention (Limit time)	Stall prevention (Current increasing)	L9
	Stall prevention (Start up error)	
	Wave form in startup abnormality	
	Out-of-step	
Transmission error between inverter and outdoor unit	Inverter transmission error	LC
Defective temperature sensor of inverter radiation fin	Faulty radiation fin thermistor of radiation fin	P4
Refrigerant shortage	Refrigerant shortage alarm	U0
Power supply voltage abnormality	Insufficient Inverter voltage	U2
	Faulty charge of capacitor in main inverter circuit	
	Error due to SP-PAM overvoltage	
	Error due to P-N short circuit	
No implementation of test-run		U3
Transmission error between indoor and outdoor unit	I/O transmission error	U4
	I/O transmission error	
Conflict in wiring and piping, no setting for system	Conflict in wiring and piping	UF

○: ON ●: OFF ◑: Blink

Error Code	Confirmation of Error 1							Confirmation of Error 2							Confirmation of Error 3							Confirmation of Error 4						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P	H1P	H2P	H3P	H4P	H5P	H6P	H7P
E1	◑	◑	●	●	●	◑	◑	◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
E3								◑	●	○	●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	*1	
E4								◑	●	○	●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
E5								◑	●	○	●	◑	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
E7								◑	●	○	●	◑	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	◑		
E9								◑	●	○	◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
H9	◑	◑	●	●	◑	●	●	◑	●	○	◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	*1	
F3	◑	◑	●	●	◑	●	◑	◑	●	○	●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	*1	
F6								◑	●	○	●	◑	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
J3	◑	◑	●	●	◑	◑	●	◑	●	○	●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	*1	
J5								◑	●	○	●	◑	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
J6								◑	●	○	●	◑	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
JA								◑	●	○	◑	●	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
JC								◑	●	○	◑	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
L1	◑	◑	●	●	◑	◑	◑	◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	●	●
								◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	●	◑
								◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	●
								◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
								◑	●	○	●	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	◑	●	●
L4								◑	●	○	●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●	*1	
L5								◑	●	○	●	◑	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
L8								◑	●	○	◑	●	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	◑	●		
															◑	○	●	●	●	●	◑	◑	○	○	●	●		
L9								◑	●	○	◑	●	●	◑	◑	○	●	●	●	●	●	◑	○	○	●	●		
															◑	○	●	●	●	●	●	◑	○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	◑	●		
LC								◑	●	○	◑	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	◑		
P4	◑	◑	●	◑	●	●	●	◑	●	○	●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●	*1	
U0	◑	◑	●	◑	●	●	◑	◑	●	○	●	●	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
U2								◑	●	○	●	●	◑	●	◑	○	●	●	●	●	●	◑	○	○	●	●	*1	
															◑	○	●	●	●	●	●		○	○	●	◑		
															◑	○	●	●	●	●	●	◑	○	○	●	●	◑	●
															◑	○	●	●	●	●	●	◑	○	○	●	●	●	◑
U3								◑	●	○	●	●	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
															◑	○	●	●	●	●	●	◑	○	○	●	◑	◑	◑
U4								◑	●	○	●	◑	●	●	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑
															◑	○	●	●	●	●	●	◑	○	○	●	◑	◑	◑
UF								◑	●	○	◑	◑	◑	◑	◑	○	●	●	●	●	●	◑	○	○	●	●	◑	◑

Error 1, H4P–H7P: Display of contents of error (first digit)

Error 2, H4P–H7P: Display of contents of error (second digit)

Error 3, H4P–H7P: Display 1 of error in detail

Error 4, H4P–H7P: Display 2 of error in detail

※1

H6P	H7P	
●	●	Master
●	◑	Slave1
◑	●	Slave2
◑	◑	System

2.6 Error of External Protection Device

Remote Controller Display

A0

Applicable Models

All indoor models

Method of Error Detection

Detect open or short circuit between external input terminals in indoor unit.

Error Decision Conditions

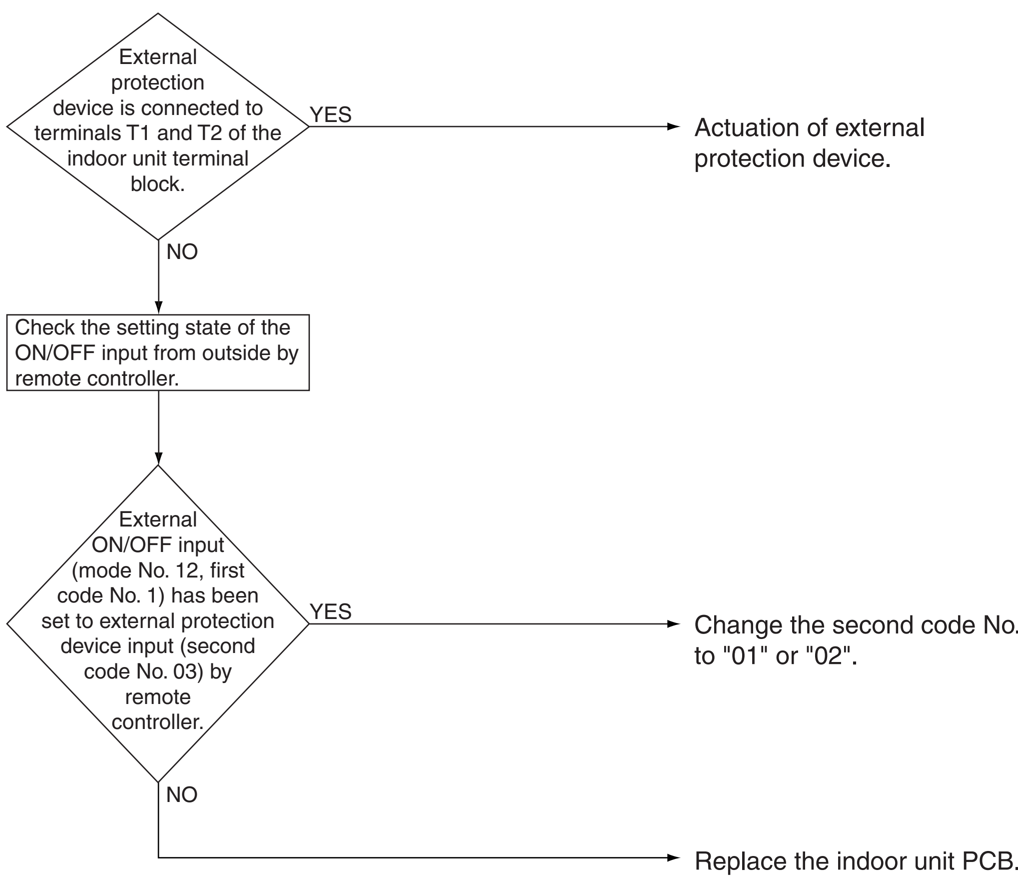
When an open circuit occurs between external input terminals with the remote controller set to "external ON/OFF terminal".

Supposed Causes

- Actuation of external protection device
- Improper field setting
- Defective indoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.7 Indoor Unit PCB Abnormality

Remote Controller Display

A1

Applicable Models

All indoor models

Method of Error Detection

Check data from E^2PROM.

Error Decision Conditions

The error is generated when the data from the E^2PROM is not received correctly.

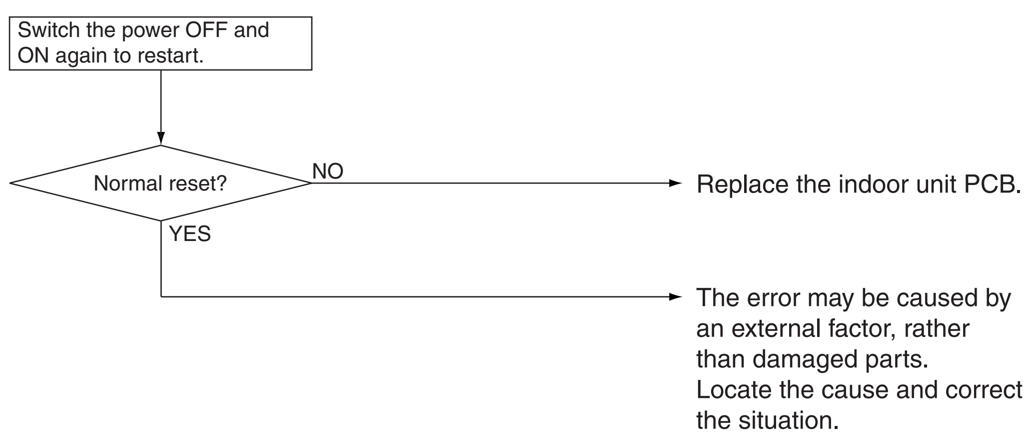
E^2PROM (Electrically Erasable Programmable Read Only Memory): A memory chip that holds its content without power. It can be erased, either within the computer or externally and usually requires more voltage for erasure than the common +5 volts used in logic circuits. It functions like non-volatile RAM, but writing to E^2PROM is slower than writing to RAM.

Supposed Causes

- Defective indoor unit PCB
- External factor (Noise, etc.)

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.8 Drain Water Level System Abnormality

Remote Controller Display

A3

Applicable Models

FCQ, FHQ (Option), FAQ (Option), FTQ

Method of Error Detection

By float switch OFF detection

Error Decision Conditions

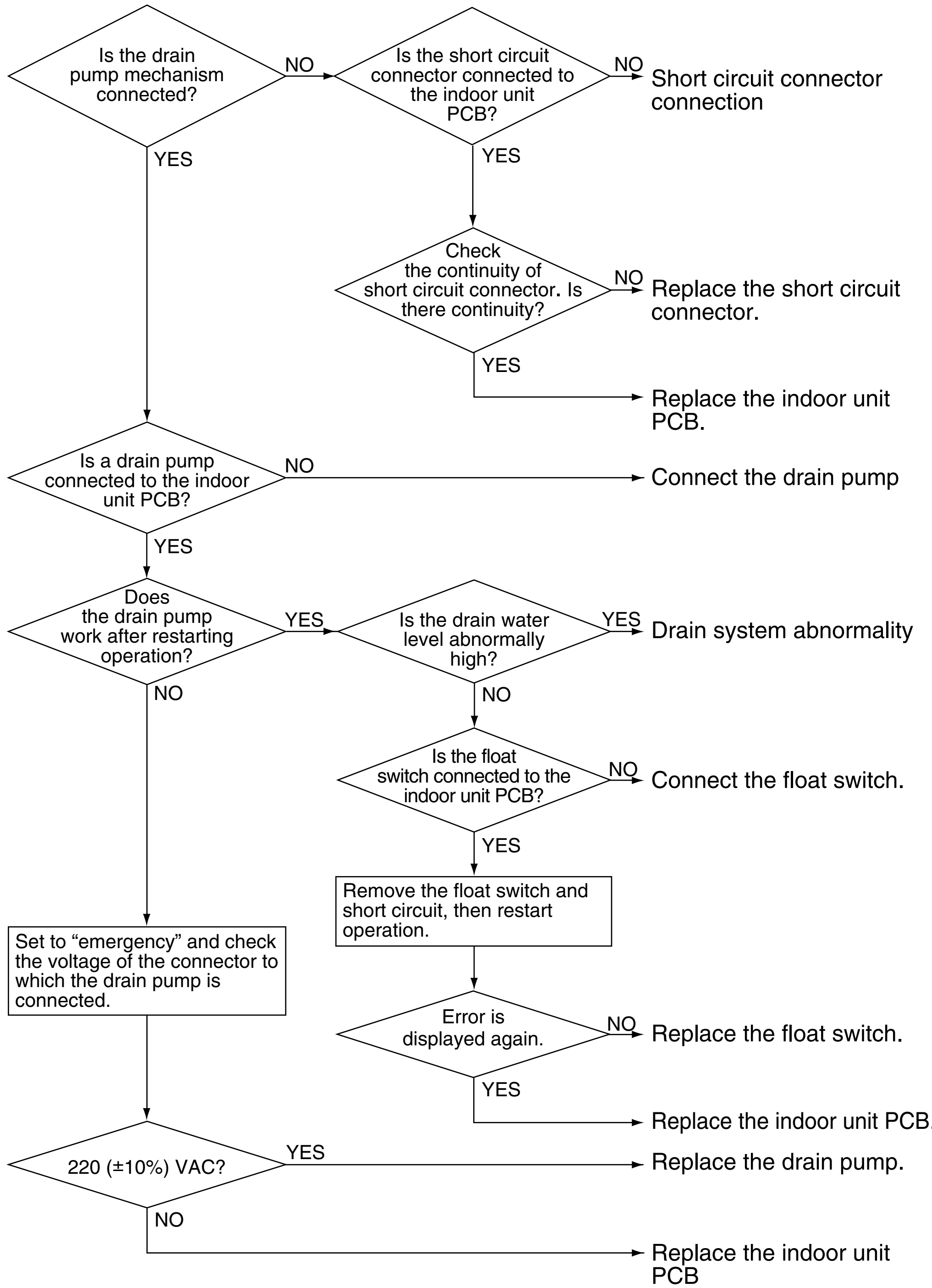
The error is generated when the water level reaches its upper limit and when the float switch turns OFF.

Supposed Causes

- Defective drain pump
- Improper drain piping work
- Drain piping clogging
- Defective float switch
- Defective indoor unit PCB
- Defective short circuit connector X15A on PCB

Troubleshooting

⚠ **Caution** Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: If "A3" is detected by a PCB which is not mounted with X15A, the PCB is defective.

2.9 Indoor Unit Fan Motor Abnormality

Remote Controller Display

A6

Applicable Models

All indoor models

Method of Error Detection

Detection of abnormal fan revolution by signal from the fan motor

Error Decision Conditions

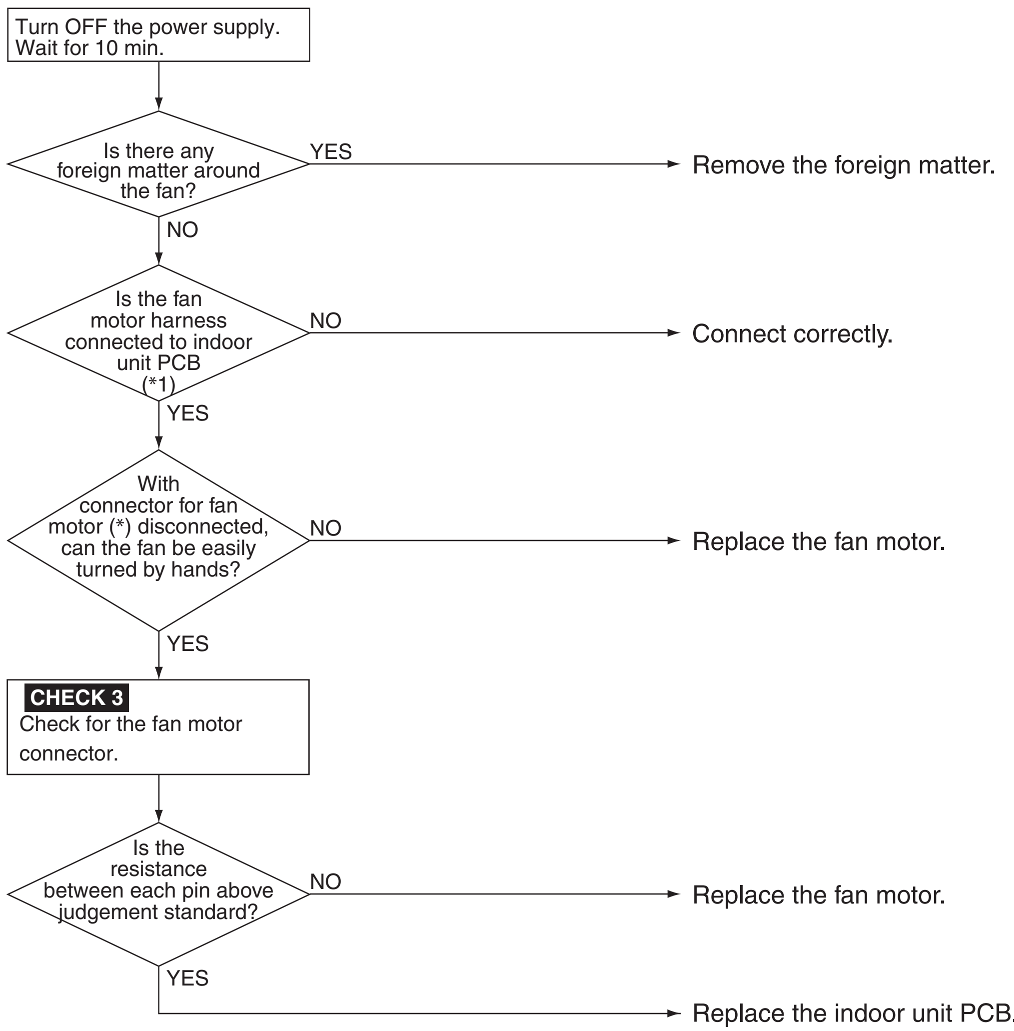
The error is generated when the fan revolution do not increase while the output voltage to the fan is at its maximum.

Supposed Causes

- Disconnection, short circuit or disengagement of connector in fan motor harness
- Defective fan motor (disconnection, poor insulation)
- Abnormal signal from fan motor (defective circuit)
- Defective Indoor unit PCB
- Instantaneous fluctuation of power supply voltage
- Fan motor lock
  (Caused by motor or other external factors)
- Fan does not turn due to a tangle of foreign matters.
- Disconnection of the connector between the high-power PCB and the low-power PCB.

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: ∗1. Connector and indoor unit PCB

	Connector for fan motor	PCB
FCQ	X4A	A1P
FHQ	X4A	A1P
FAQ	X20A	A1P
FBQ	X8A or X1A and X2A	A2P
FTQ	X1A	A2P

CHECK 3 Refer to P.175.

2.10 Swing Flap Motor Abnormality / Lock

Remote Controller Display

A7

Applicable Models

FCQ, FHQ, FAQ

Method of Error Detection

The error is detected by the limit switch when the motor turns.

Error Decision Conditions

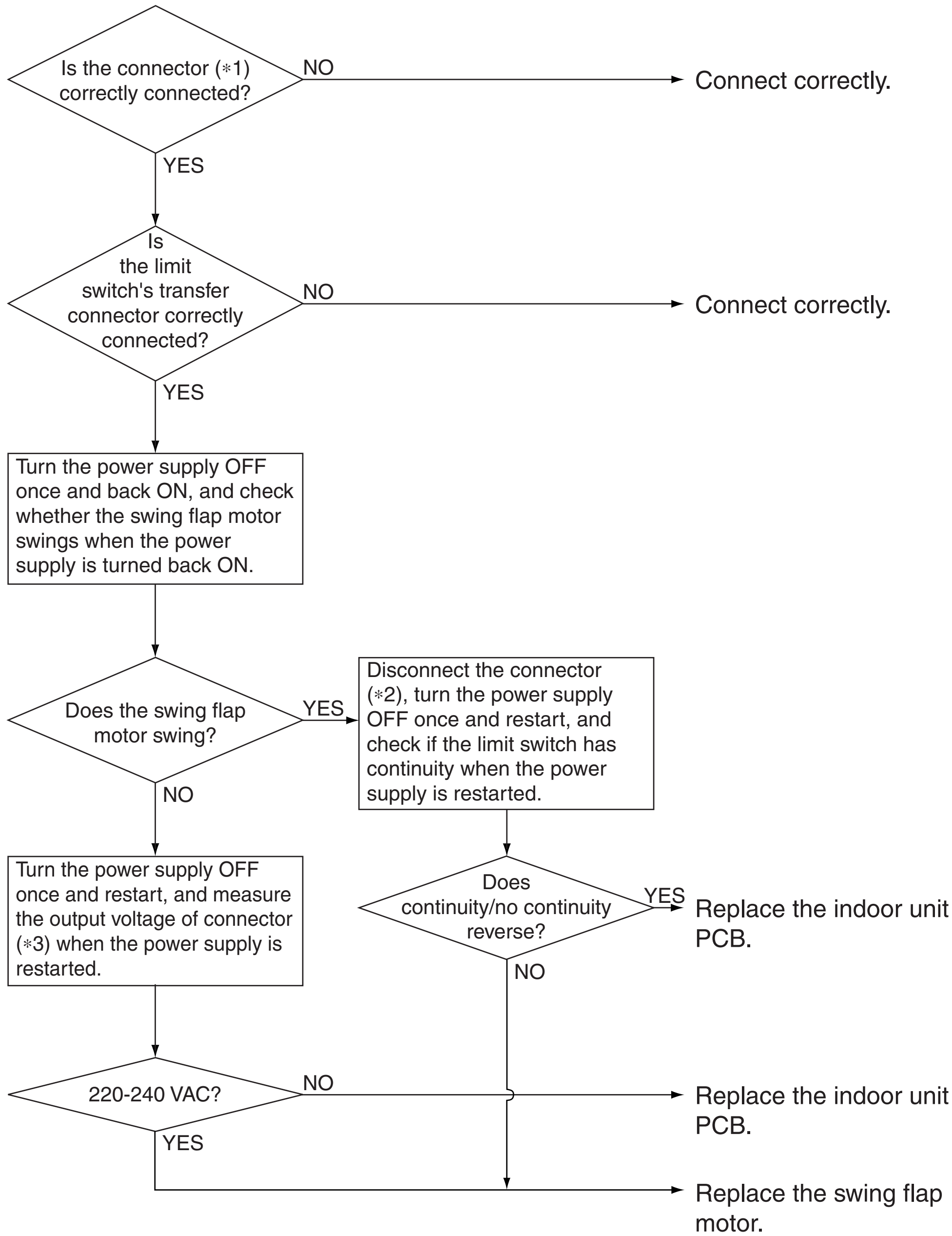
When ON/OFF of the micro-switch for position detection cannot be reversed even though the swing flap motor is energized for a specified amount of time (about 30 seconds).
∗ Error code is displayed but the system operates continuously.

Supposed Causes

- Defective swing flap motor
- Defective micro-switch
- Defective connector connection
- Defective indoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: ∗1. Connector and indoor unit PCB

Model	Connector for swing flap motor			PCB
	∗1	∗2	∗3	
FCQ	X36A	X36A	X36A	A1P
FHQ	X6A, X9A	X9A	X6A	A1P
FAQ	X36A	X36A	X36A	A1P

2.11 Abnormal Power Supply Voltage

Remote Controller Display

A8

Applicable Models

FBQ

Method of Error Detection

Detect error checking the input voltage of fan motor

Error Decision Conditions

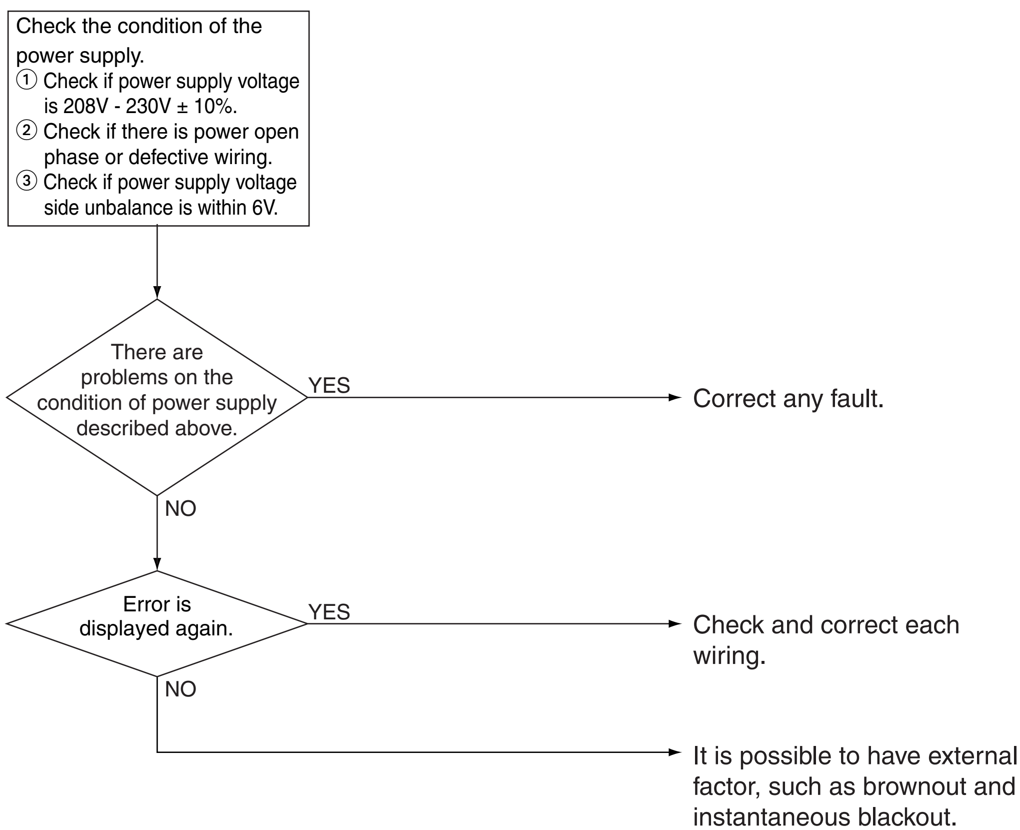
When the input voltage of fan motor is 150V and less, or 420V and more

Supposed Causes

- Power supply voltage error
- Defective connection on signal line
- Defective wiring
- Instantaneous blackout, others

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.12 Electronic Expansion Valve Coil Abnormality

Remote Controller Display

A9

Applicable Models

All indoor models

Method of Error Detection

Check the coil condition of electronic expansion valve by using micro-computer.

Error Decision Conditions

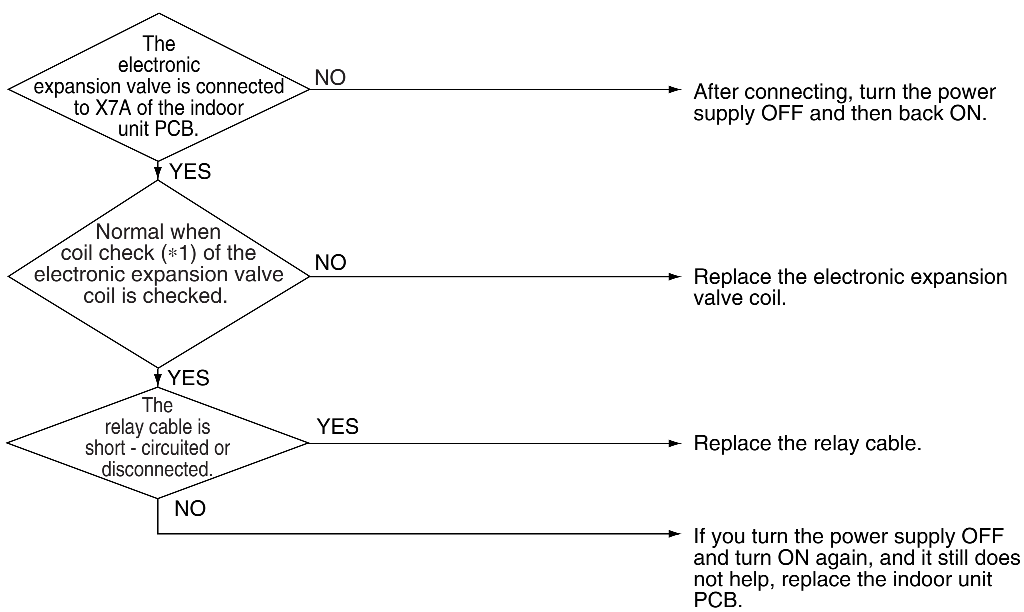
Pin input for electronic expansion valve coil is abnormal when initializing micro-computer.

Supposed Causes

- Defective electronic expansion valve coil
- Defective indoor unit PCB
- Defective relay cable

Troubleshooting

⚠ **Caution** Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



∗1: Coil check method for the electronic expansion valve coil
Discount the electronic expansion valve from the PCB and check the continuity between the connector pins.

(Normal)

Pin No.	1. White	2. Yellow	3. Orange	4. Blue	5. Red	6. Brown
1. White		×	○ Approx. 300Ω	×	○ Approx. 150Ω	×
2. Yellow			×	○ Approx. 300Ω	×	○ Approx. 150Ω
3. Orange				×	○ Approx. 150Ω	×
4. Blue					×	○ Approx. 150Ω
5. Red						×
6. Brown						

○: Continuity
×: No continuity

2.13 Drain System Abnormality

Remote Controller Display

AF

Applicable Models

All indoor models

Method of Error Detection

Water leakage is detected based on float switch ON/OFF operation while the compressor is in non-operation.

Error Decision Conditions

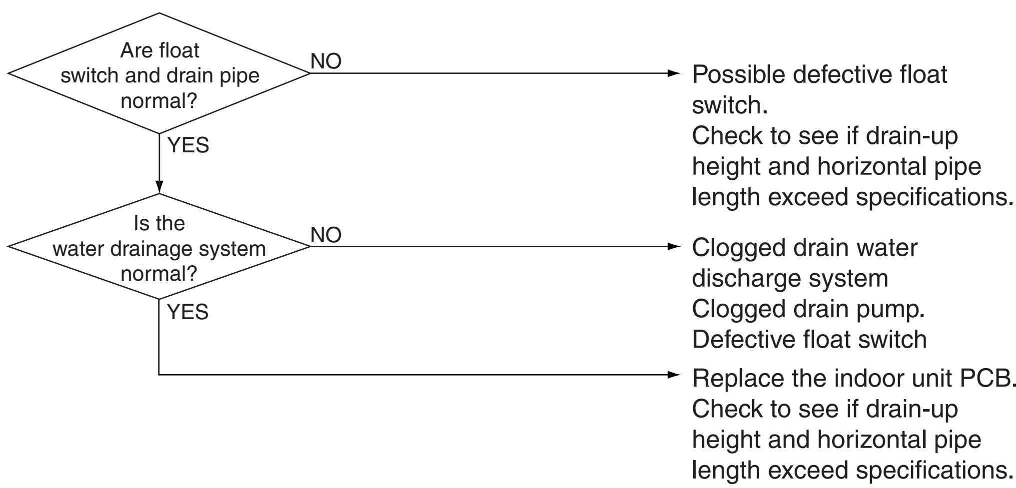
The float switch changes from ON to OFF while the compressor is OFF.
∗ Error code is displayed but the system operates continuously.

Supposed Causes

- Error in the drain pipe installation
- Defective float switch
- Defective indoor unit PCB
- Defective connector connection
- Defective drain pump

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.14 Capacity Setting Abnormality

Remote Controller Display

AJ

Applicable Models

All indoor models

Method of Error Detection

Capacity is determined according to resistance of the capacity setting adaptor and the memory inside the IC memory on the indoor unit PCB, and whether the value is normal or abnormal is determined.

Error Decision Conditions

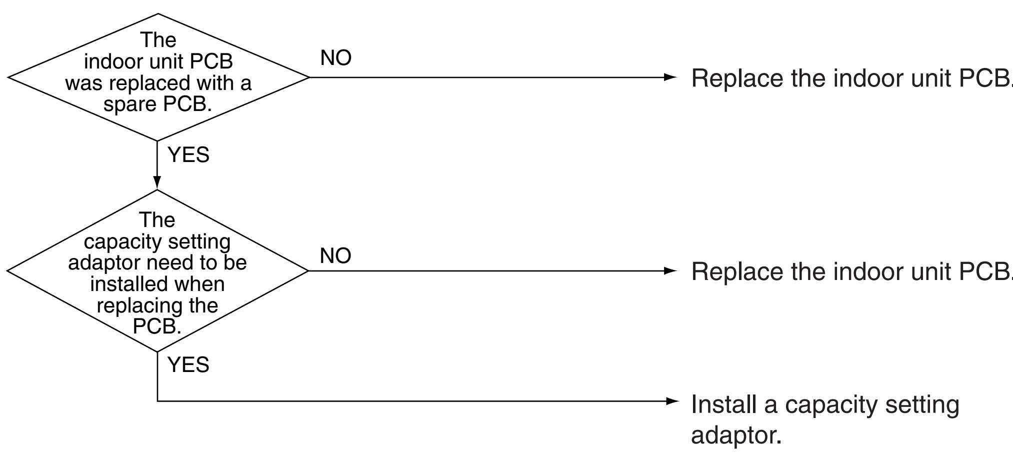
Operation and:
When the capacity code is not contained in the PCB memory, and the capacity setting adaptor is not connected.

Supposed Causes

- Defective capacity setting adaptor connection
- Defective indoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.15 Transmission Error between Indoor Unit PCB and Fan PCB

Remote Controller Display

C1

Applicable Models

FBQ

Method of Error Detection

Check the condition of transmission between indoor unit PCB and fan PCB using computer.

Error Decision Conditions

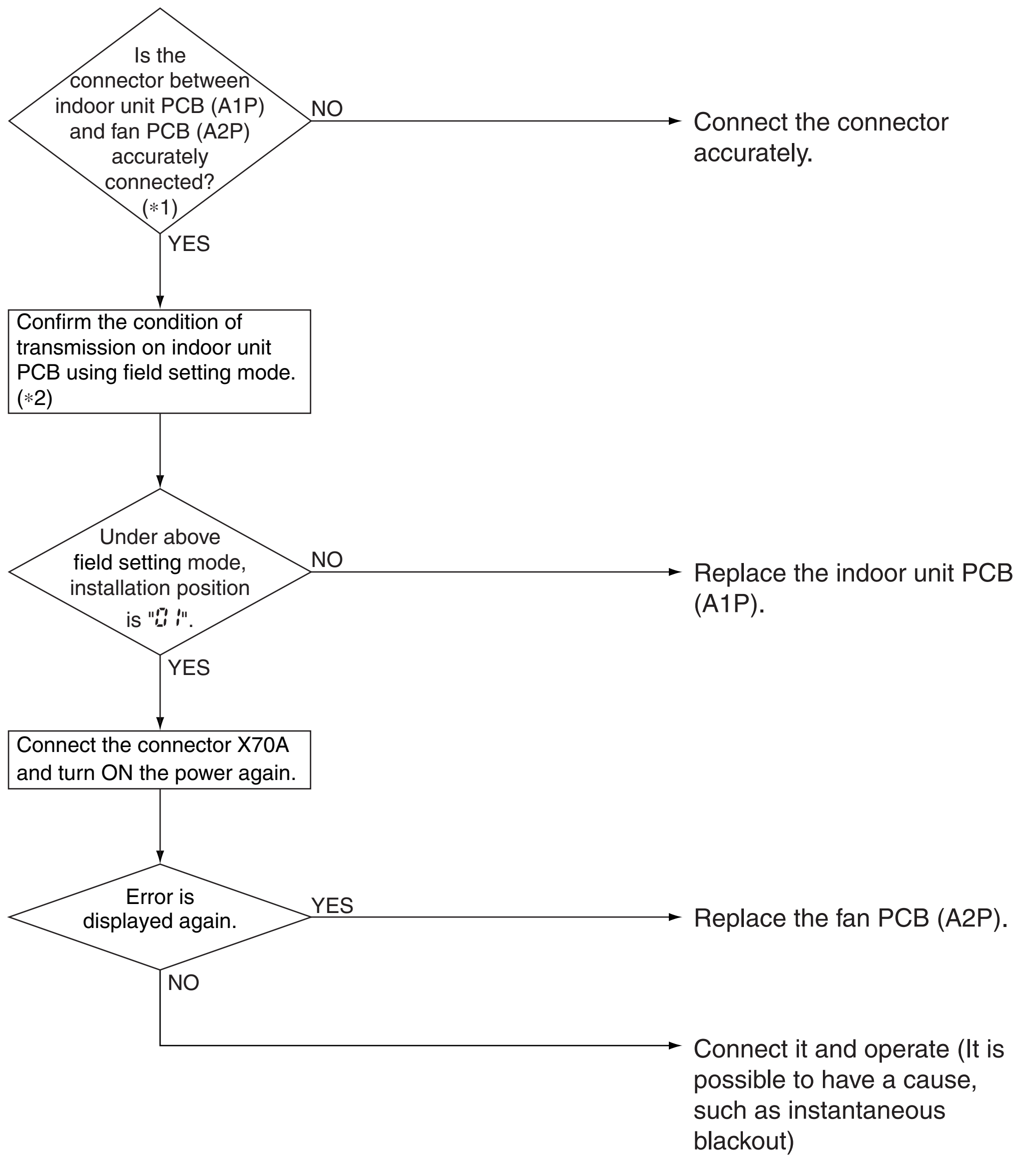
When normal transmission is not conducted for certain duration.

Supposed Causes

- Connection error of the connector between indoor unit PCB and fan PCB.
- Defective indoor unit PCB
- Defective fan PCB
- External factor, such as instantaneous blackout.

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

*1. Pull out and insert the connector once and check it is absolutely connected.

*2. Method to check transmission part of indoor unit PCB.

(1) Turn OFF the power and remove the connector X70A of indoor unit PCB (A1P).

(2) Short circuit X70A.

(3) After turning ON the power, check below numbers under field setting of remote controller. (Confirmation: second code No. at the condition of first code No. 21 on mode No. 41)

↓

Determination	01: Normal
	Other than 01: Transmission defect on indoor unit PCB

* After confirmation, turn OFF the power, take off the short circuit and connect X70A back to original condition.

2.16 Heat Exchanger (Liquid pipe) Thermistor Abnormality

Remote Controller Display

C4

Applicable Models

All indoor models

Method of Error Detection

The error is detected by temperature detected by heat exchanger thermistor.

Error Decision Conditions

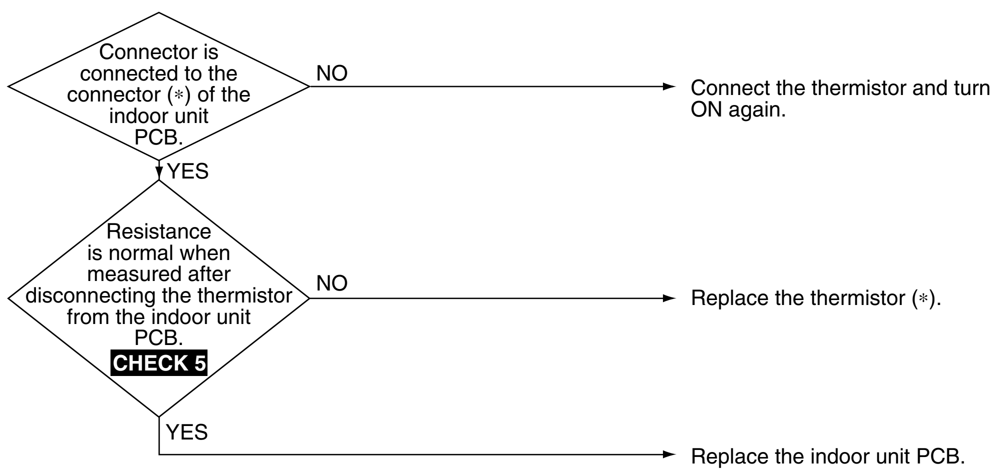
When the heat exchanger thermistor becomes disconnected or shorted while the unit is running

Supposed Causes

- Defective thermistor for heat exchanger (liquid pipe)
- Defective indoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: * Connector and indoor unit PCB

Model	Connector for the heat exchanger (liquid pipe) thermistor	Electric Symbol	PCB
FCQ	X18A	R2T	A1P
FHQ	X12A	R2T	A1P
FAQ	X18A	R2T	A1P
FBQ	X18A	R2T	A1P
FTQ	X18A	R1T	A1P

CHECK 5 Refer to P.177, 178.

2.17 Heat Exchanger (Gas Pipe) Thermistor Abnormality

Remote Controller Display

C5

Applicable Models

All indoor models

Method of Error Detection

The error is detected by temperature detected by gas pipe thermistor.

Error Decision Conditions

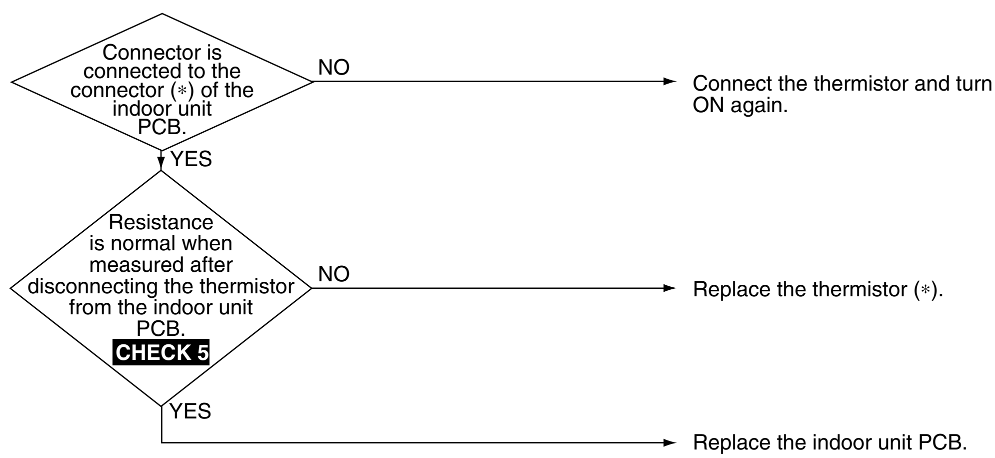
When the gas pipe thermistor becomes disconnected or shorted while the unit is running

Supposed Causes

- Defective indoor unit thermistor for heat exchanger (gas pipe)
- Defective indoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: ∗ Connector and indoor unit PCB

Model	Connector for the heat exchanger (gas pipe) thermistor	Electric Symbol	PCB
FCQ	X17A	R3T	A1P
FHQ	X11A	R3T	A1P
FAQ	X14A	R3T	A1P
FBQ	X17A	R3T	A1P
FTQ	X17A	R2T	A1P

CHECK 5 Refer to P.177, 178.

2.18 Combination Error between Indoor Unit PCB and Fan PCB

Remote Controller Display

C6

Applicable Models

FBQ

Method of Error Detection

Conduct open line detection with fan PCB (A2P) using indoor unit PCB (A1P).

Error Decision Conditions

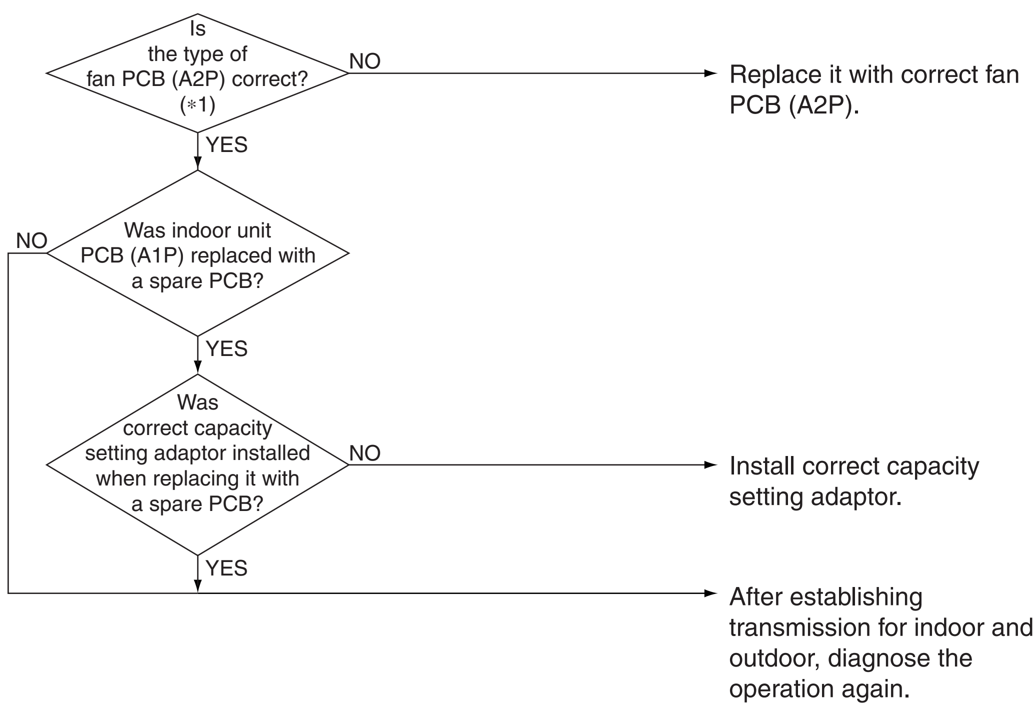
When the communication data of fan PCB is determined as incorrect.

Supposed Causes

- Defective fan PCB
- Defective connection of capacity setting adaptor.
- Defective field setting

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: ∗1. Type of fan PCB

Applicable model	Type of fan PCB
FBQ18/24/30	PC0609-2
FBQ36/42	PC0609-3

2.19 Suction Air Thermistor Abnormality

Remote Controller Display

C9

Applicable Models

FCQ, FHQ, FAQ, FBQ

Method of Error Detection

The error is detected by temperature detected by suction air thermistor.

Error Decision Conditions

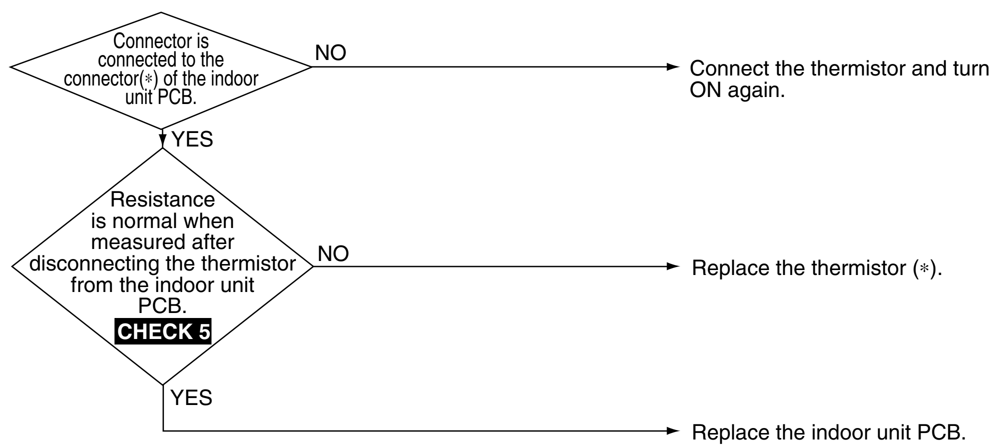
When the suction air thermistor becomes disconnected or shorted while the unit is running

Supposed Causes

- Defective indoor unit thermistor for suction air
- Defective indoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: * Connector and indoor unit PCB

Model	Connector for the suction air thermistor	Symbol	PCB
FCQ	X16A	R1T	A2P
FHQ	X13A	R1T	A1P
FAQ	X19A	R1T	A1P
FBQ	X16A	R1T	A1P

CHECK 5 Refer to P.177, 178.

2.20 Humidity Sensor System Abnormality

Remote Controller Display

CC

Applicable Models

FCQ

Method of Error Detection

The error is detected according to the humidity (output voltage) detected by humidity sensor.

Error Decision Conditions

The error is generated when the humidity sensor becomes disconnected or shorted when the unit is running.

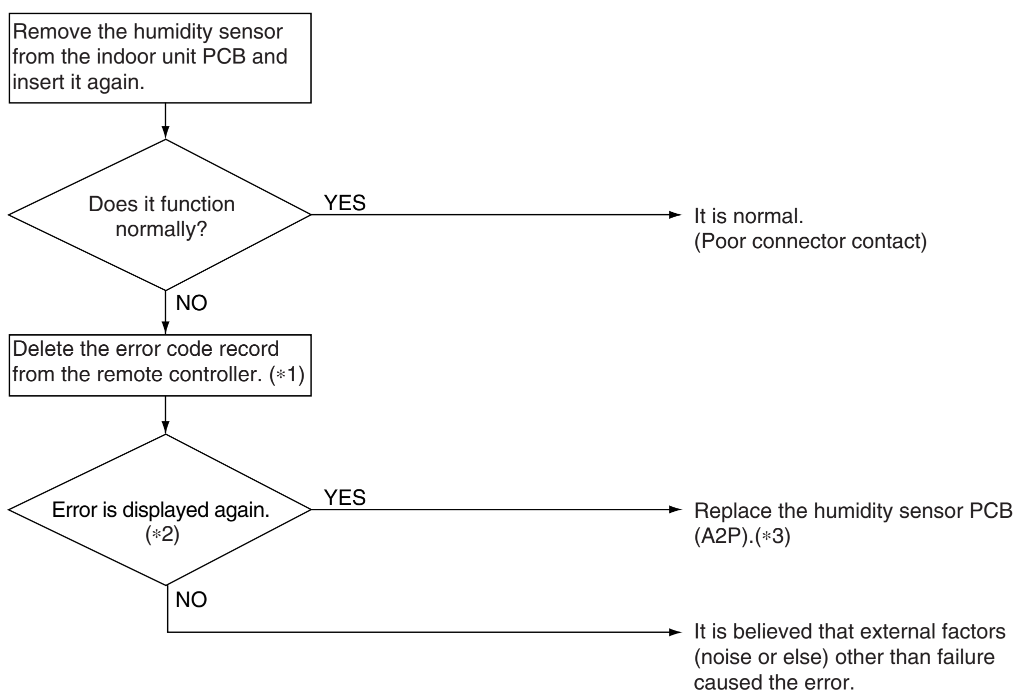
∗ Error code is displayed but the system operates continuously.

Supposed Causes

- Defective sensor
- Broken wire
- External factor (Noise, etc.)

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

∗1. To delete the record, the ON/OFF button of the remote controller must be pressed and held for 5 seconds in the check mode.

∗2. To display the code, the Inspection/Test button of the remote controller must be pressed and held in the normal mode.

∗3. If "CC" is displayed even after replacing the humidity sensor PCB (A2P) and taking the steps ∗1 and 2, replace the indoor unit PCB (A1P).

2.21 Room Temperature Thermistor in Remote Controller Abnormality

Remote Controller Display

CJ

Applicable Models

All indoor models

Method of Error Detection

Error detection is carried out by temperature detected by room temperature thermistor in remote controller. (∗1)

Error Decision Conditions

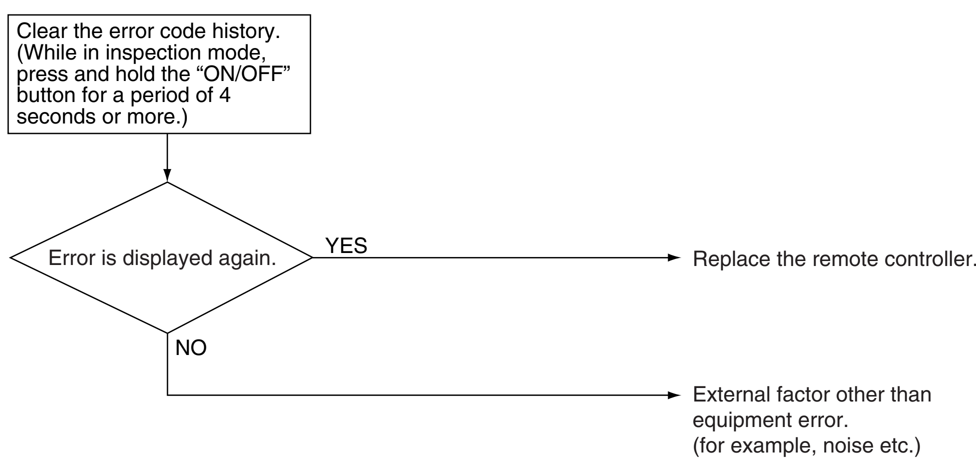
When the room temperature thermistor in remote controller becomes disconnected or shorted while the unit is running.
∗ Error code is displayed but the system operates continuously.

Supposed Causes

- Defective room temperature thermistor in remote controller
- Defective remote controller PCB
- External factor (Noise, etc.)

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: ∗1. How to delete “the history of error codes”.
Press the “ON/ OFF” button for 4 seconds and more while the error code is displayed in the inspection mode.

2.22 Outdoor Unit PCB Abnormality

Remote Controller Display

E1

Applicable Models

RZR, RZQ

Method of Error Detection

Micro-computer checks whether E^2PROM is normal.

Error Decision Conditions

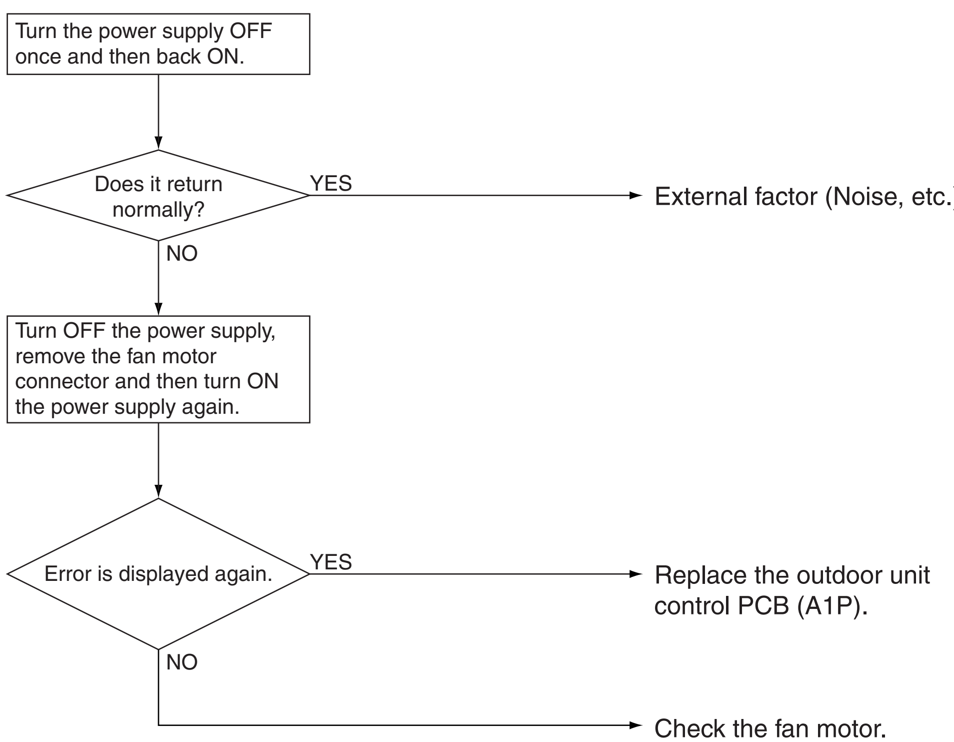
When E^2PROM error when turning the power supply ON

Supposed Causes

- Defective outdoor unit PCB
- Defective fan motor
- External factor (Noise, etc.)

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.23 High Pressure Abnormality

Remote Controller Display

E3

Applicable Models

RZR, RZQ

Method of Error Detection

Abnormality is detected when the contact of the high pressure switch opens.

Error Decision Conditions

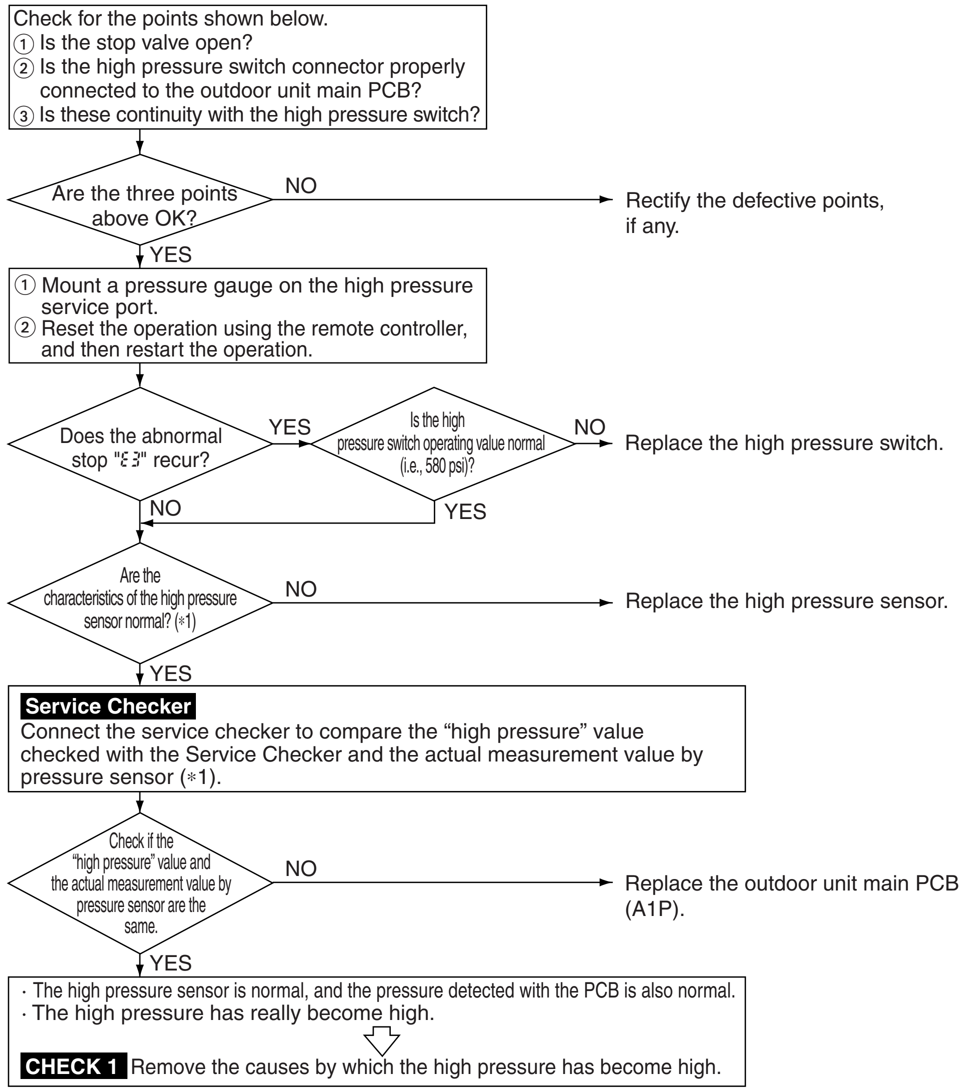
Error is generated when the S1PH (High pressure switch) activation count reaches the number specific to the operation mode.
(Reference) Operating pressure of high pressure switch
Operating pressure: 580 psi
Reset pressure: 435 psi

Supposed Causes

- Actuation of outdoor unit high pressure switch
- Defective high pressure switch
- Defective outdoor unit PCB
- Instantaneous power failure
- Defective high pressure sensor

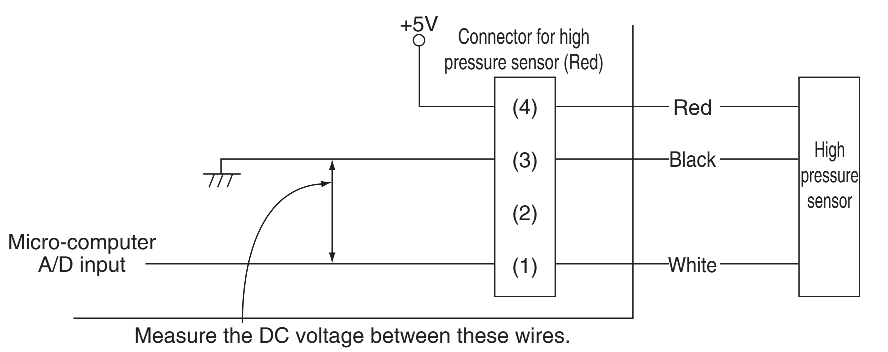
Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: ∗1: Make a comparison between the voltage of the pressure sensor and that read by the pressure gauge.
(Measure the pressure-sensor voltage at the connector (∗2), and then convert it to pressure. **CHECK 6**)

∗2: Measure the voltage of the pressure sensor.



CHECK1 Refer to P.173.

CHECK6 Refer to P.179.

2.24 Actuation of Low Pressure Sensor

Remote Controller Display	E4
Applicable Models	RZR, RZQ
Method of Error Detection	Abnormality is detected by the pressure value with the low pressure sensor.
Error Decision Conditions	Error is generated when the low pressure is dropped during compressor operating. Operating pressure: 10 psi
Supposed Causes	■ Abnormal drop of low pressure (Lower than 10 psi) ■ Defective low pressure sensor ■ Defective outdoor unit PCB ■ Stop valve is not opened. ■ Clogged filter

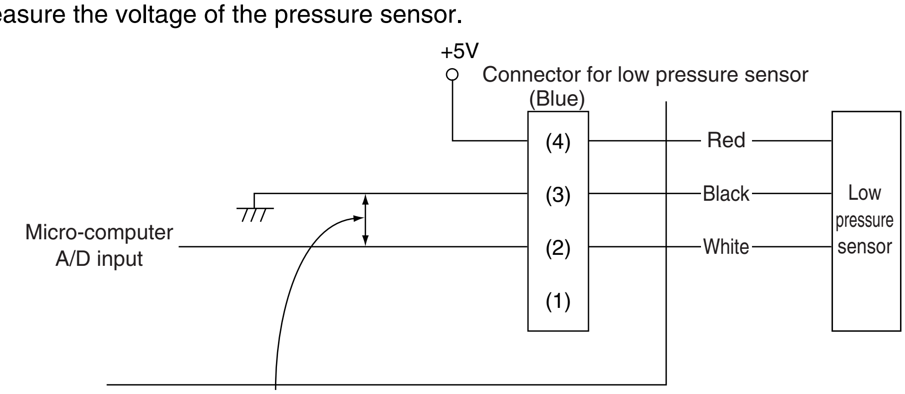
Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

- **Is the stop valve open?**
  - NO → Open the stop valve.
  - YES ↓
- ① Mount a pressure gauge on the low pressure service port.
  ② Reset the operation using the remote controller, and then restart the operation.
- **Are the characteristics of the low pressure sensor normal? (∗1)**
  - NO → Replace the low pressure sensor.
  - YES ↓
- **Service Checker**
  Connect the service checker to compare the "low pressure" value checked with the Service Checker and the actual measurement value by pressure sensor (∗1).
- **Check if the "low pressure" value and the actual measurement value by pressure sensor are the same.**
  - NO → Replace the outdoor unit main PCB (A1P).
  - YES ↓
- · The low pressure sensor is normal, and the pressure detected with the PCB is also normal.
  · The low pressure has really become low.
  ⇩
  CHECK 2 Remove the causes by which the low pressure has become low.

Note: ∗1: Make a comparison between the voltage of the pressure sensor and that read by the pressure gauge.
(Measure the pressure-sensor voltage at the connector (∗2), and then convert it to pressure. **CHECK 6**)

∗2: Measure the voltage of the pressure sensor.



Make measurement of DC voltage between these wires.

CHECK2 Refer to P.174

CHECK6 Refer to P.179.

2.25 Inverter Compressor Motor Lock

Remote Controller Display

E5

Applicable Models

RZR, RZQ

Method of Error Detection

Detect the motor lock when the compressor is energized.

Error Decision Conditions

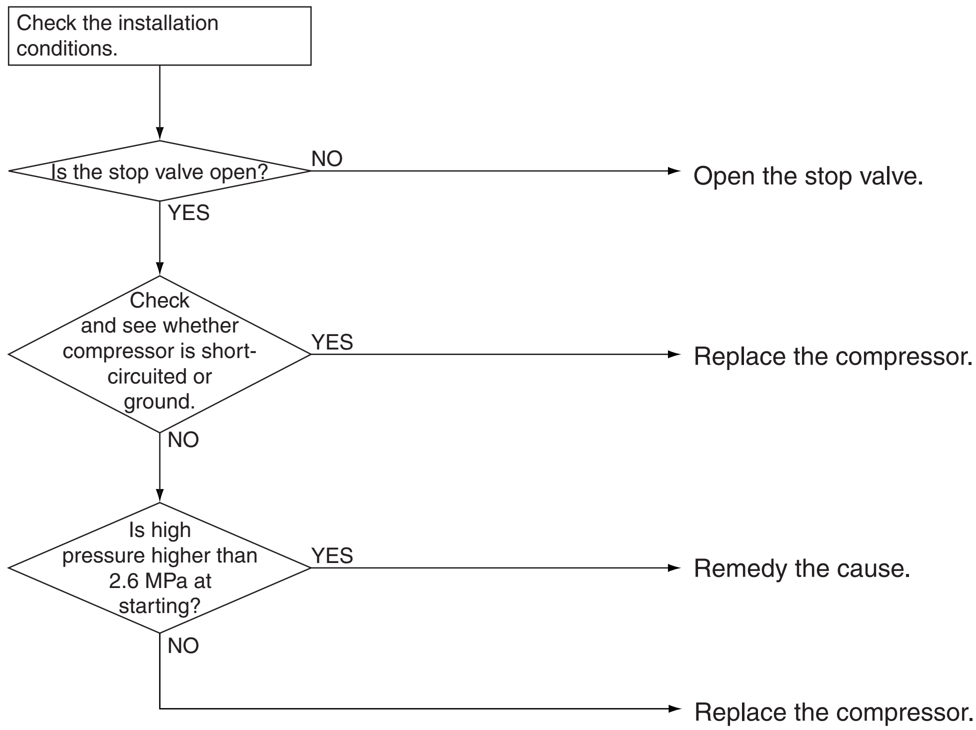
If the motor rotor does not rotate when the compressor is energized.

Supposed Causes

- Inverter Compressor lock
- High differential pressure (377 psi or more) starting
- Incorrect UVW wiring
- Defective inverter PCB
- Stop valve is not opened.

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.26 Outdoor Unit Fan Motor Abnormality

Remote Controller Display

E7

Applicable Models

RZR, RZQ

Method of Error Detection

The error is detected according to the revolution speed detected by hall IC when the fan motor runs.

Error Decision Conditions

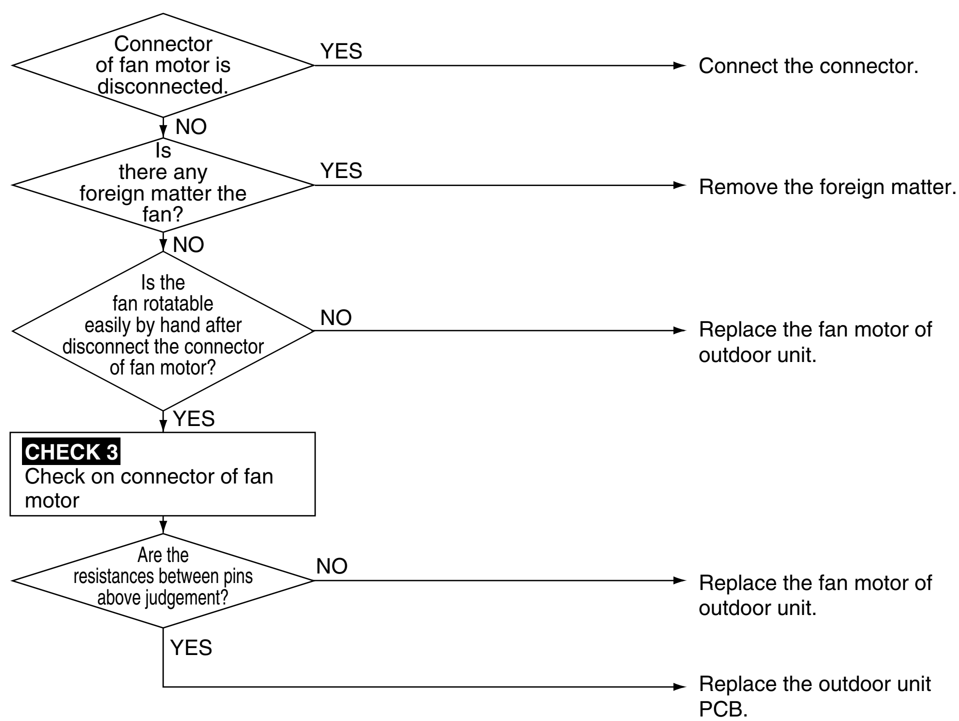
- When the fan runs with revolution speed less than a specified one for 6 seconds or more when the fan motor running conditions are met
- When the error is generated 4 times, the system shuts down.

Supposed Causes

- Defective fan motor
- The harness connector between fan motor and PCB is left in disconnected, or defective connector.
- Fan does not run due to foreign matters tangled.
- Clearing condition: Operate for 5 minutes (normal)

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



CHECK 3 Refer to P.175.

2.27 Electronic Expansion Valve Coil Abnormality

Remote Controller Display

E9

Applicable Models

RZR, RZQ

Method of Error Detection

Detect errors based on check of continuity of the electronic expansion valve.
Detect errors by suction pipe superheated degree, discharge pipe superheated degree and electronic expansion valve opening degree.

Error Decision Conditions

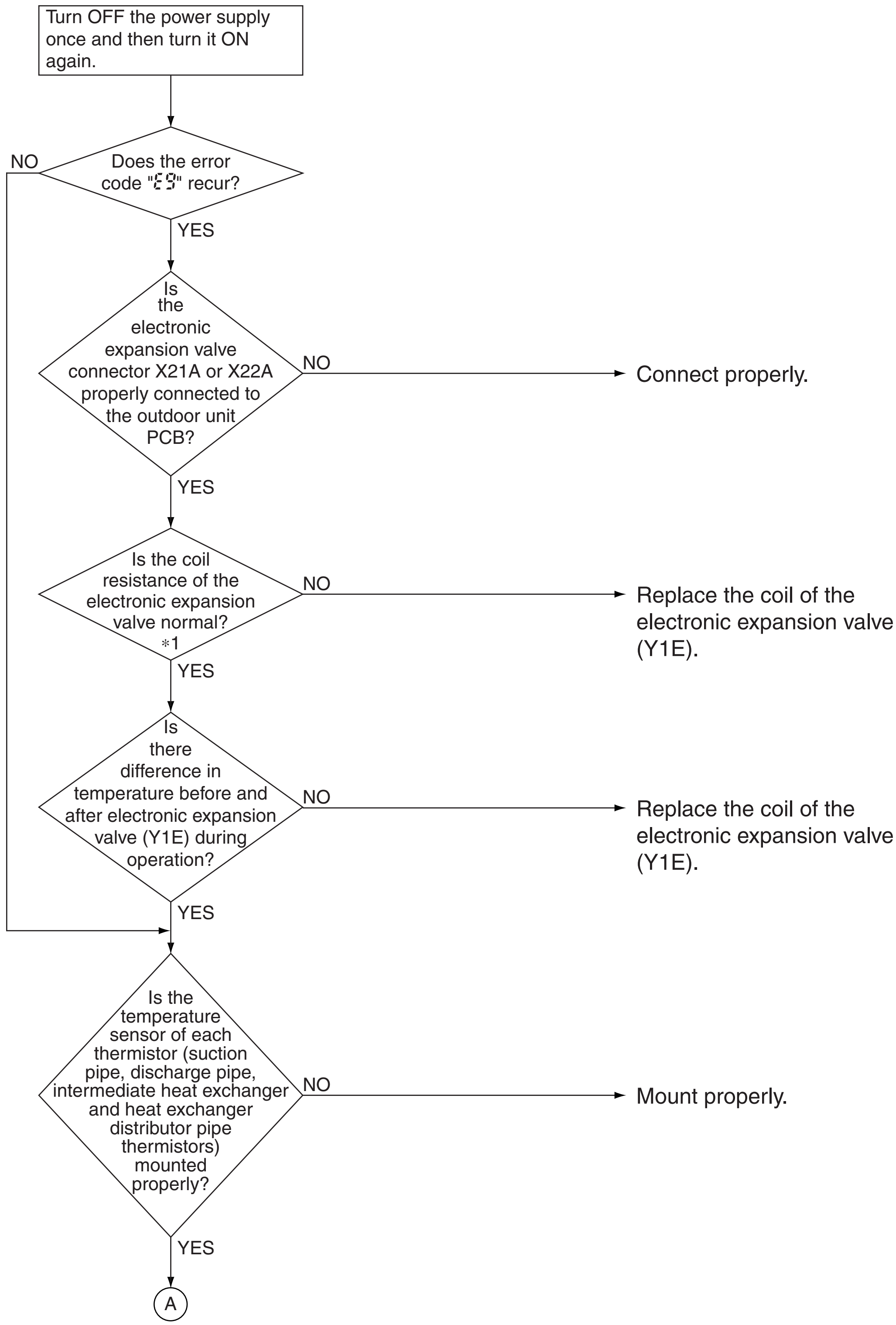
- No common power supply when the power is turned ON
- When the following conditions are established
  Suction pipe superheated degree < 39.2°F
  Discharge pipe superheated degree < 41°F
  Electronic expansion valve opening degree < Minimum opening degree

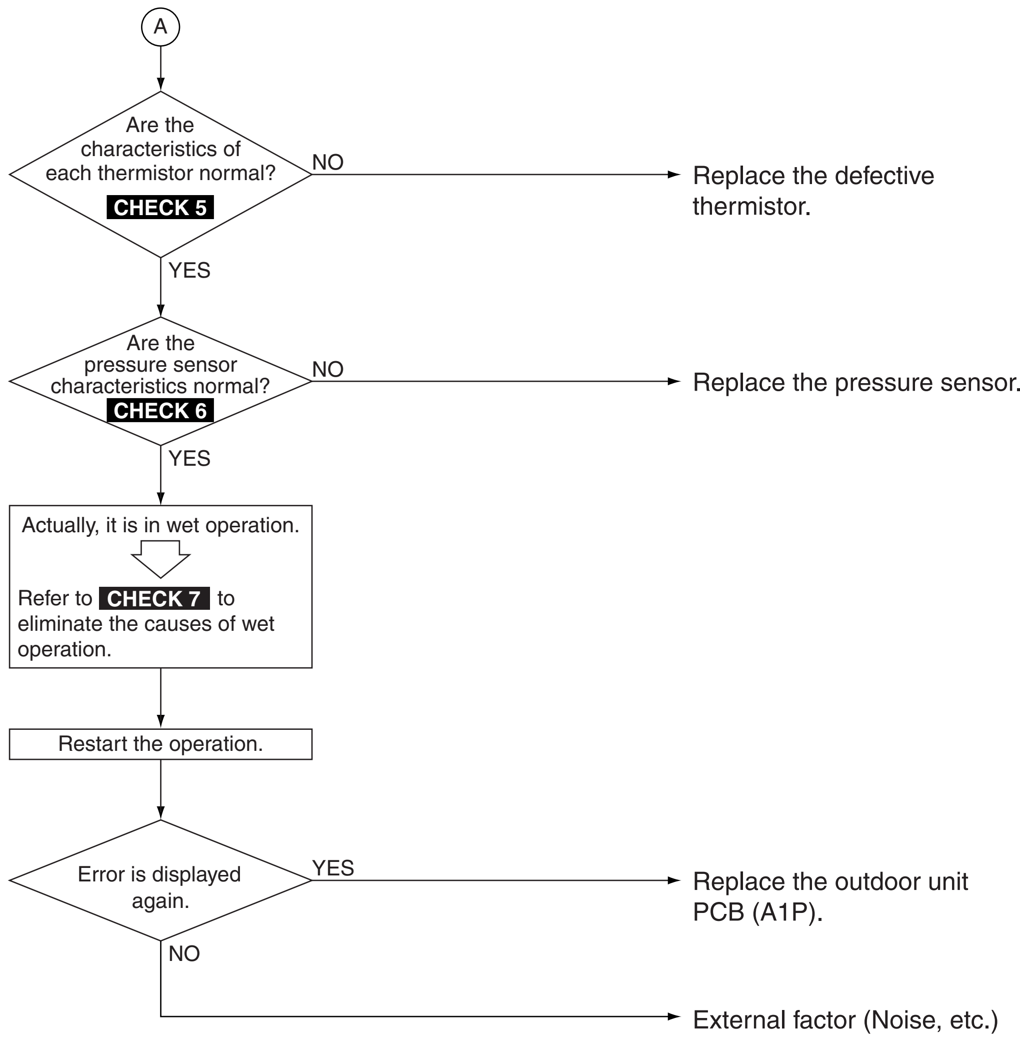
Supposed Causes

- Defective electronic expansion valve
- Disconnection of electronic expansion valve harness
- Defective connection of electronic expansion valve connector
- Defective each thermistor
- Defective of each thermistor mounting
- Defective pressure sensor
- Defective outdoor unit control PCB
- Wet operation

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.





CHECK 5 Refer to P.177, 178.

CHECK 6 Refer to P.179.

CHECK 7 Refer to P.180.

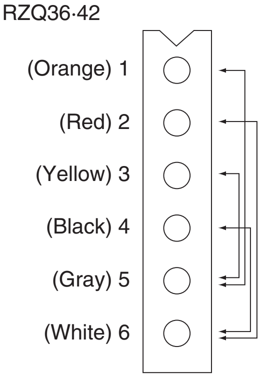
Note: ∗1 Make measurement of resistance between the connector pins, and then make sure the resistance falls in the range of 43 to 49Ω.

RZR18~30
RZQ18~30



Measuring points
1 - 6
2 - 6
3 - 6
4 - 6

RZR36·42
RZQ36·42



Measure points
1 - 5
3 - 5
2 - 6
4 - 6

2.28 Discharge Pipe Temperature Control Error

Remote Controller Display

F3

Applicable Models

RZR, RZQ

Method of Error Detection

Abnormality is detected according to the temperature detected by the discharge pipe thermistor.

Error Decision Conditions

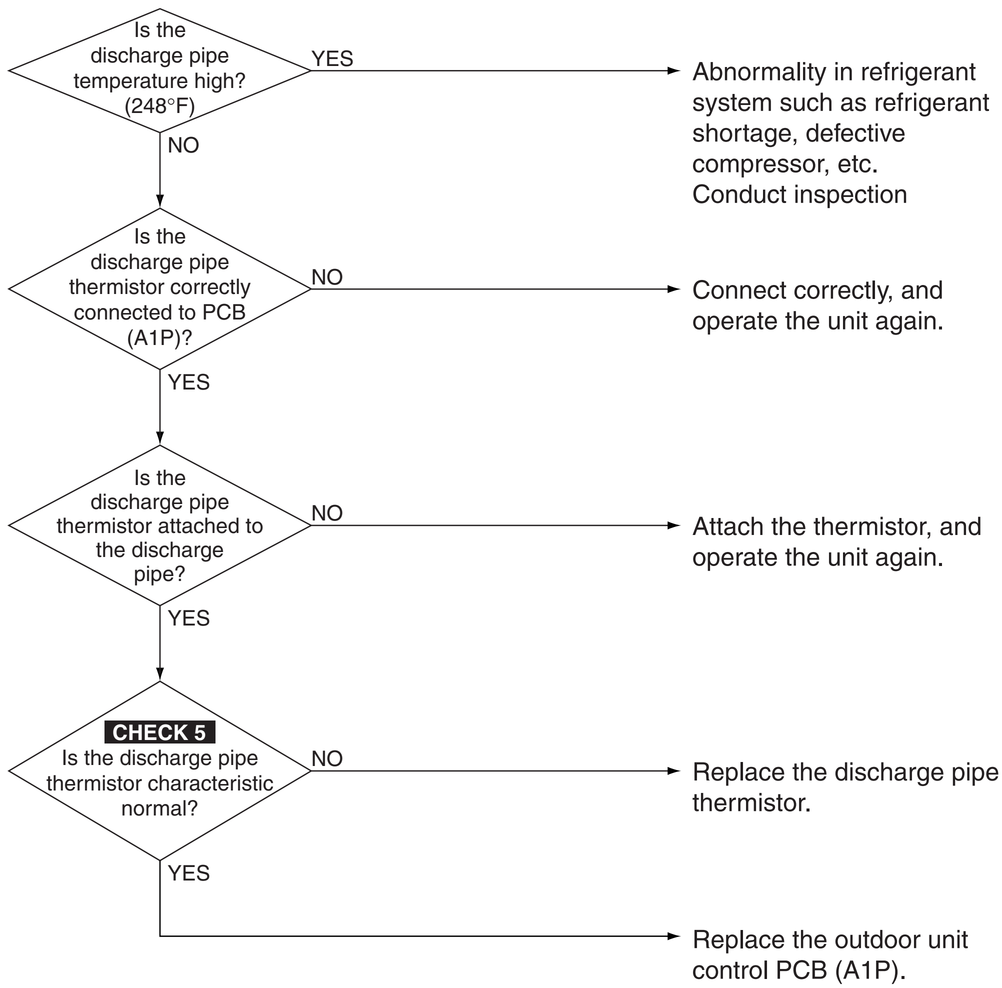
When the discharge pipe temperature rises to an abnormally high level
When the discharge pipe temperature rises suddenly
When the discharge pipe temperature does not rise after operation start

Supposed Causes

- Refrigerant shortage
- Defective compressor
- Defective discharge pipe thermistor
- Defective connection of discharge pipe thermistor
- Disconnection of discharge pipe thermistor
- Defective outdoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



CHECK 5 Refer to P.177, 178.

2.29 Refrigerant Overcharged

Remote Controller Display

F6

Applicable Models

RZR, RZQ

Method of Error Detection

Excessive charging of refrigerant is detected by using the outdoor air temperature and heat exchanger deicer temperature during check operation.

Error Decision Conditions

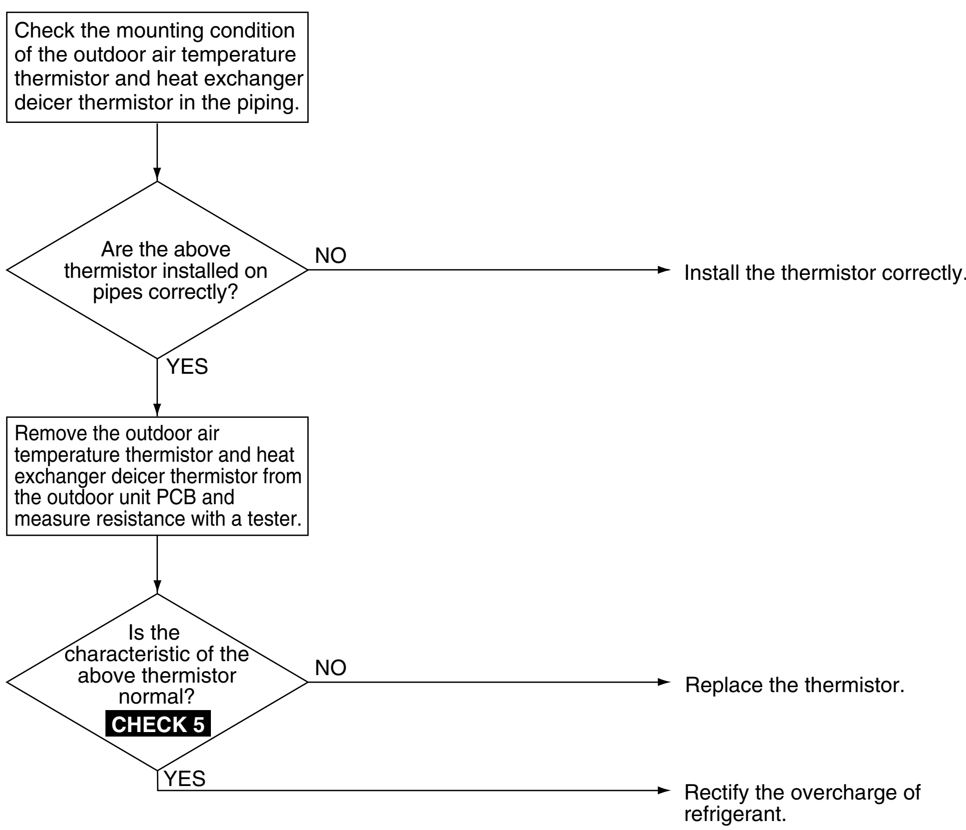
When the amount of refrigerant, which is calculated by using the outdoor air temperature and heat exchanging deicer temperature during check operation, exceeds the criteria.

Supposed Causes

- Refrigerant overcharge
- Disconnection of outdoor air thermistor
- Disconnection of heat exchanger deicer thermistor

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



CHECK 5 Refer to P.177, 178.

2.30 High Pressure Switch System Abnormality

Remote Controller Display

H3

Applicable Models

RZR, RZQ

Method of Error Detection

The protection device circuit checks continuity in the high pressure switch.

Error Decision Conditions

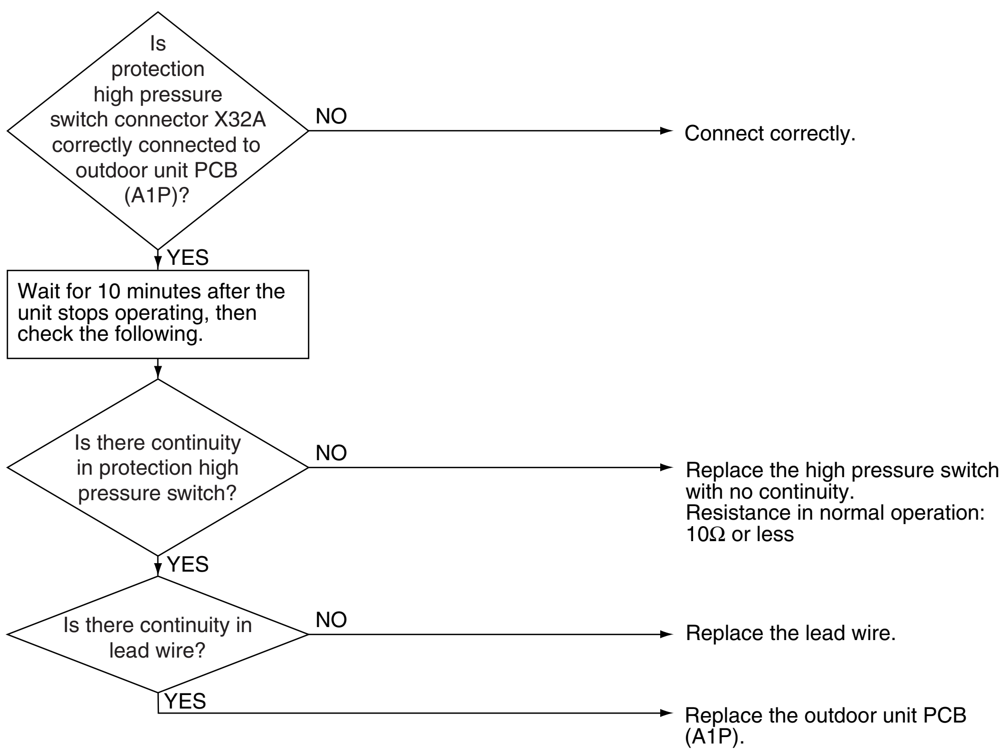
When there is no continuity in the high pressure switch during compressor stops operating

Supposed Causes

- Defective high pressure switch
- Defective connection of high pressure switch connector
- Defective outdoor unit PCB
- Disconnected lead wire

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.31 Outdoor Unit Fan Motor Signal Abnormality

Remote Controller Display

H7

Applicable Models

RZR, RZQ

Method of Error Detection

Detection of abnormal signal from fan motor

Error Decision Conditions

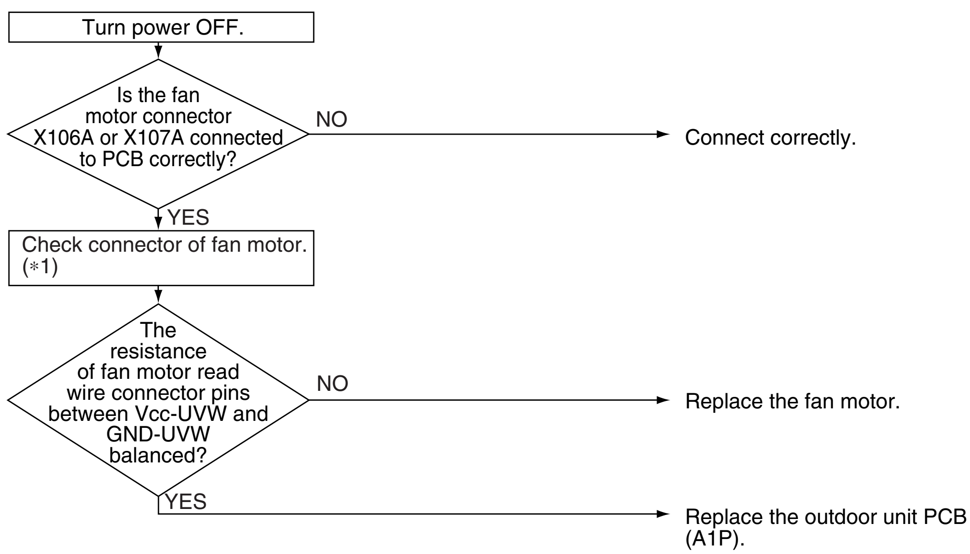
In case of detection of abnormal signal at starting fan motor

Supposed Causes

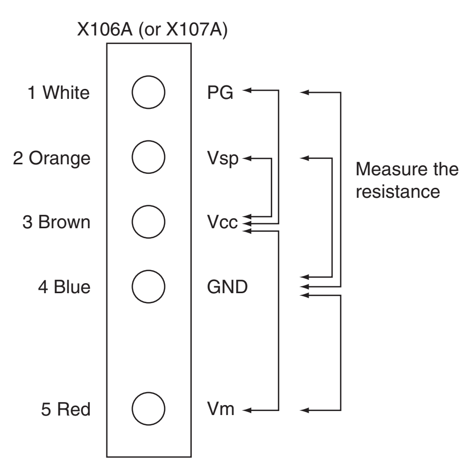
- Defective fan motor signal (circuit error)
- Broken, short or disconnection connector of fan motor connection cable
- Inverter PCB abnormality

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: ∗1: Disconnect connector and measure the following resistance.



2.32 Thermistor System Abnormality

Remote Controller Display

H9, J3, J5, J6

Applicable Models

RZR, RZQ

Method of Error Detection

The error is detected from the temperature detected by each thermistor.

Error Decision Conditions

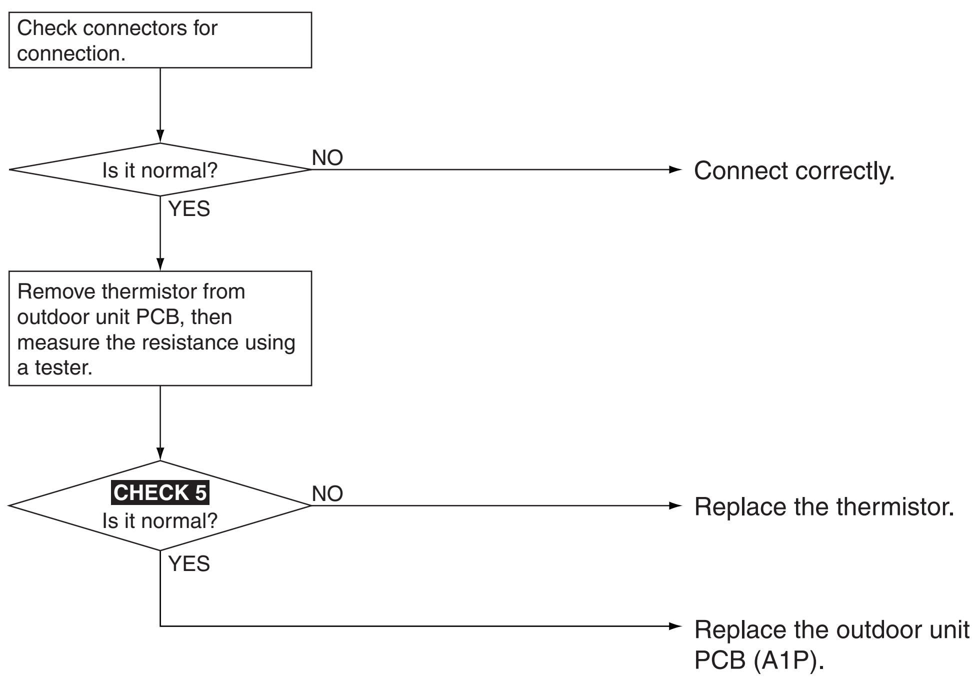
When thermistor is disconnected or short-circuited during operation

Supposed Causes

- Defective thermistor
- Defective connection of connector
- Defective outdoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Error Code	Electric symbol	Defective thermistor	Connector
H9	R1T	Outdoor air thermistor	X11A
J3	R2T	Discharge pipe thermistor	X12A
J5	R3T, R5T	Suction pipe thermistor	X12A
J6	R4T	Heat exchanger thermistor	X12A

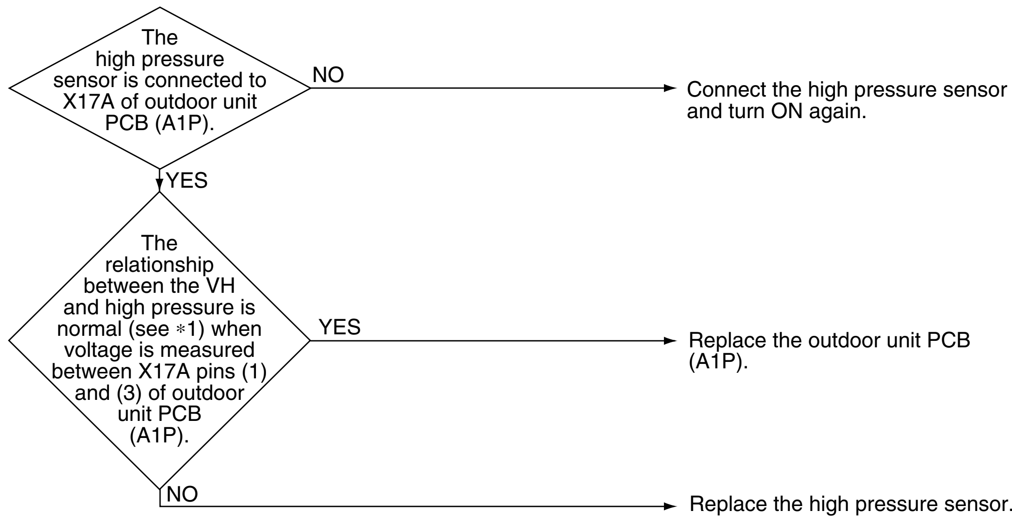
CHECK 5 Refer to P.177, 178.

2.33 High Pressure Sensor Abnormality

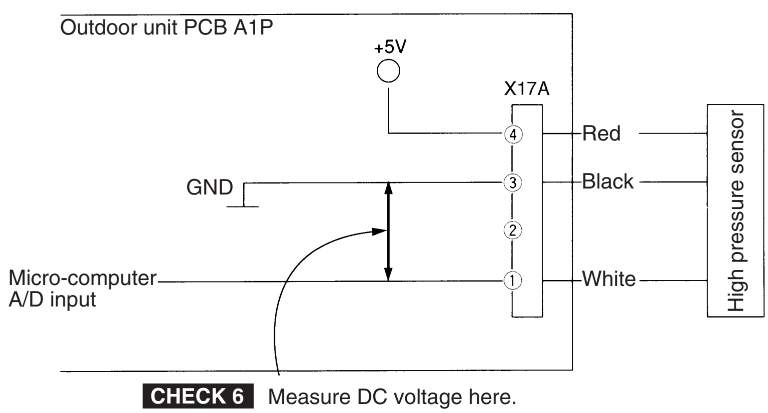
Remote Controller Display	JA
Applicable Models	RZR, RZQ
Method of Error Detection	The error is detected from the pressure detected by the high pressure sensor.
Error Decision Conditions	When the high pressure sensor is short-circuit or open circuit
Supposed Causes	■ Defective high pressure sensor ■ Connection of low pressure sensor with wrong connection ■ Defective outdoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



∗1: Voltage measurement point



CHECK 6 Refer to P.179.

2.34 Low Pressure Sensor Abnormality

Remote Controller Display

JC

Applicable Models

RZR, RZQ

Method of Error Detection

The error is detected from the pressure detected by the low pressure sensor.

Error Decision Conditions

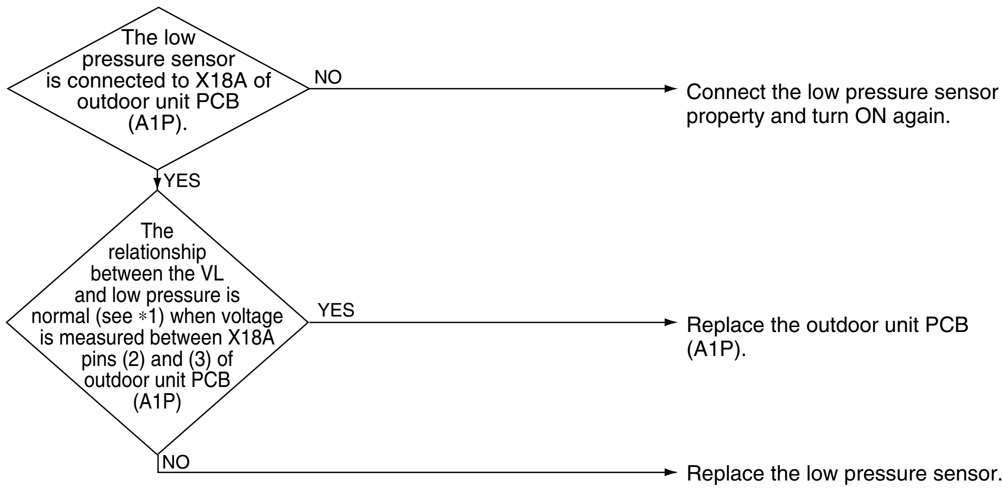
When the low pressure sensor is short circuit or open circuit

Supposed Causes

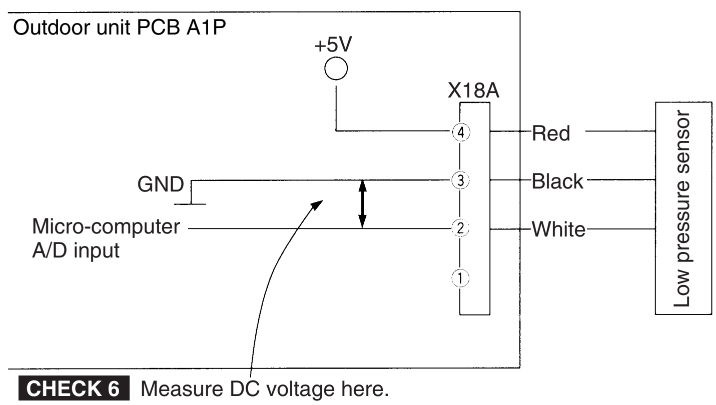
- Defective low pressure sensor
- Connection of high pressure sensor with wrong connection.
- Defective outdoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



∗1: Voltage measurement point



CHECK 6 Refer to P.179.

2.35 Outdoor Unit PCB Abnormality

Remote Controller Display

L1

Applicable Models

RZQ

Method of Error Detection

- Detect error by current value during waveform output before compressor startup.
- Detect error by current sensor value during synchronized operation at the time of startup.
- Detect error using an SP-PAM series capacitor overvoltage sensor.

Error Decision Conditions

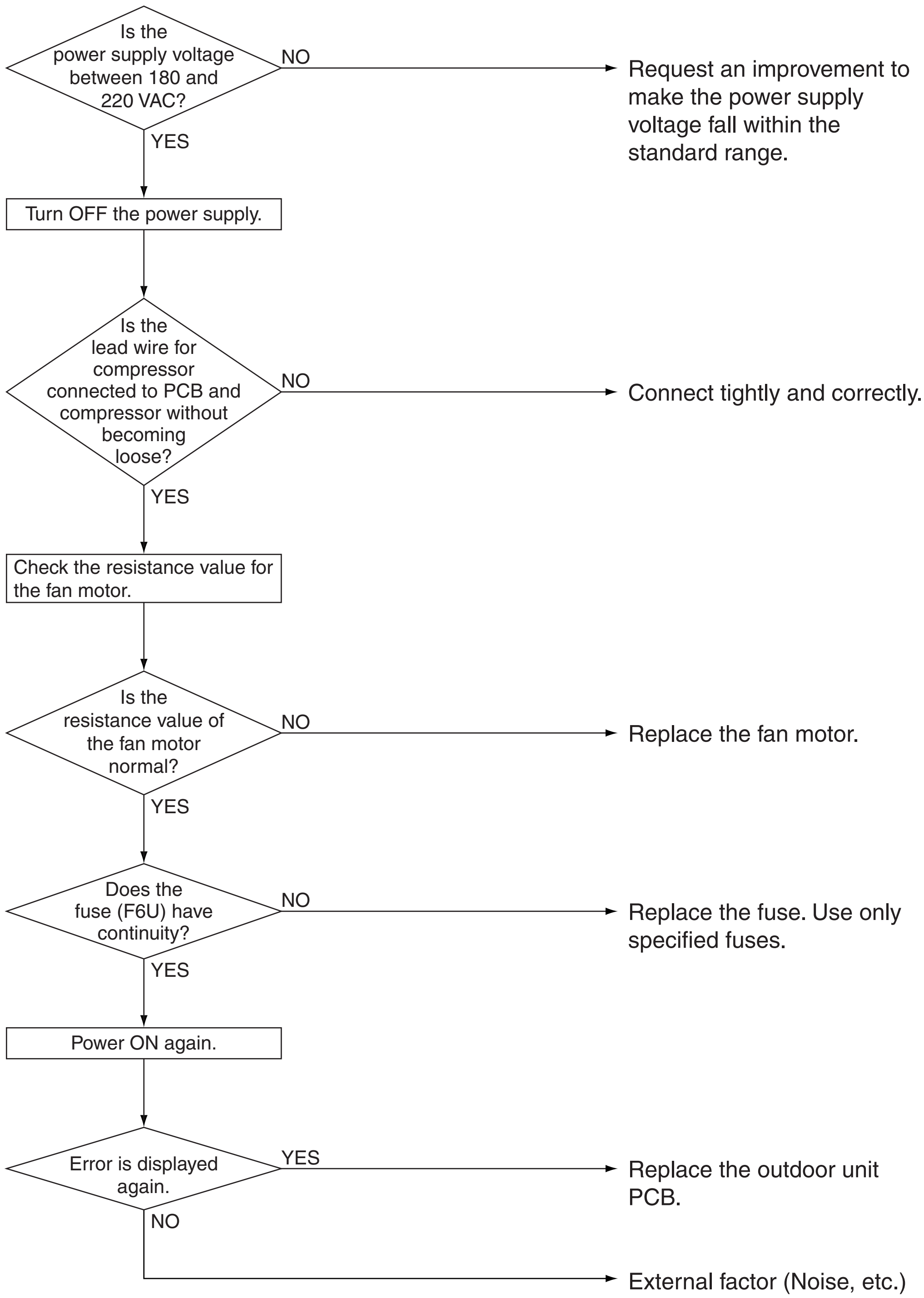
- When overcurrent is detected at the time of waveform output before operating the compressor
- When the current sensor error during synchronized operation
- When overvoltage occurs in SP-PAM
- In case of IGBT error

Supposed Causes

- Defective outdoor unit PCB (A1P)
  - IPM failure
  - Current sensor failure
  - SP-PAM failure
  - Defective of IGBT or drive circuit
- Defective connection of compressor connector
- Defective outdoor unit fan motor
- Broken fuse
- External factor (Noise, etc.)

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.36 Radiation Fin Temperature Rise

Remote Controller Display

L4

Applicable Models

RZR, RZQ

Method of Error Detection

Radiation fin temperature is detected by radiation fin thermistor.

Error Decision Conditions

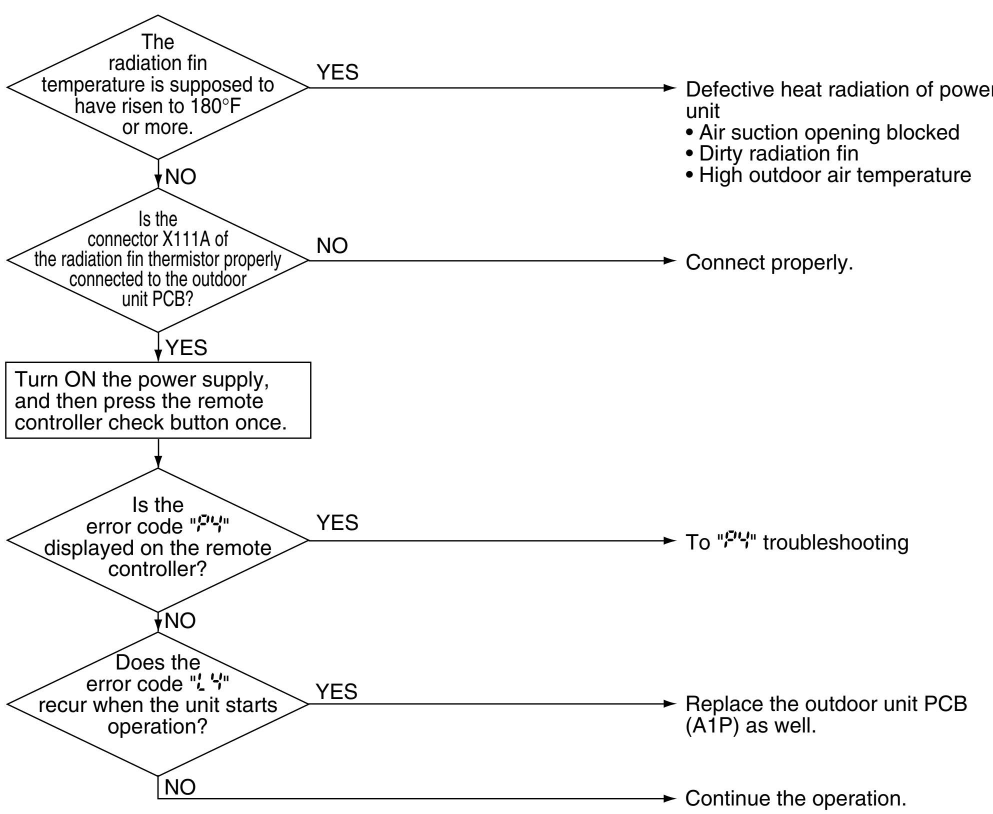
When the temperature of the inverter radiation fin rises abnormally due to defective heat dissipation.

Supposed Causes

- Defective radiation fin thermistor
- High outdoor air temperature
- Blocked suction opening
- Dirty radiation fin
- Defective outdoor unit inverter PCB
- Activation of fin thermal switch
- Insufficient cooling of inverter radiation fin
- Defective connection of connector

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.37 Momentary Overcurrent of Inverter Compressor

Remote Controller Display

L5

Applicable Models

RZR, RZQ

Method of Error Detection

The error is detected from current flowing in the power transistor.

Error Decision Conditions

When overcurrent flows in the power transistor
(Instantaneous overcurrent also causes activation)

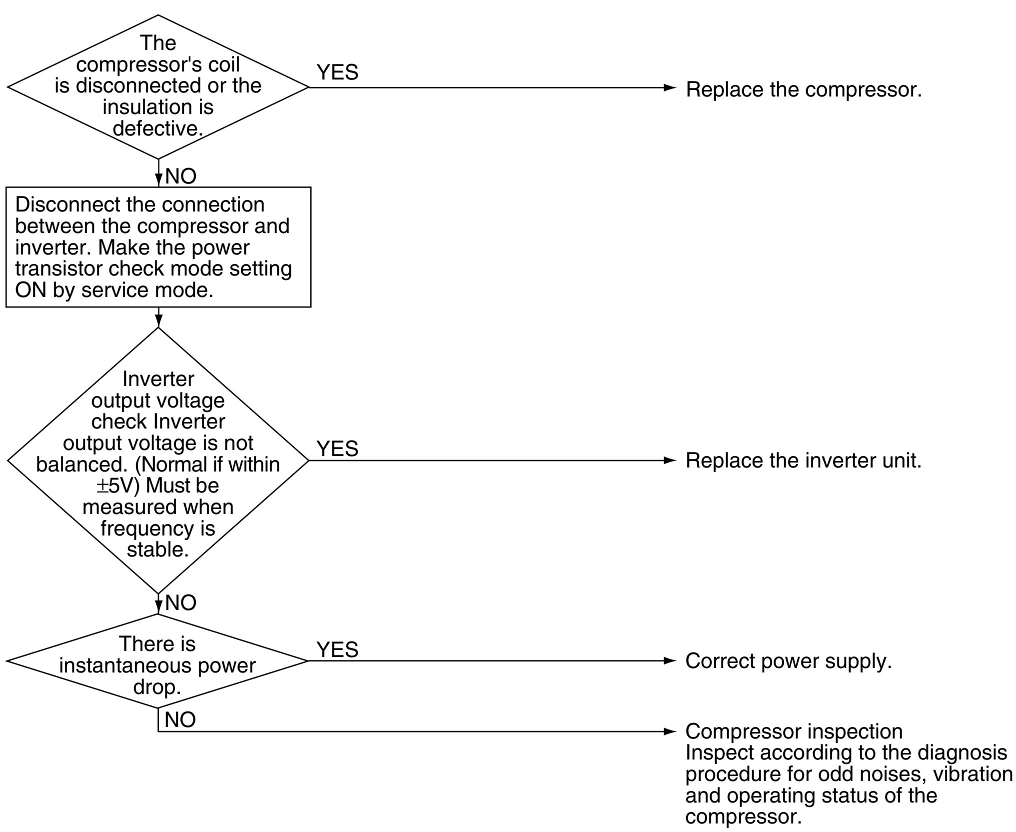
Supposed Causes

- Defective compressor coil (disconnected, defective insulation)
- Compressor startup error (mechanical lock)
- Defective inverter PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Compressor inspection



Higher voltage than actual is displayed when the inverter output voltage is checked by tester.

2.38 Electronic Thermal (Time Lag)

Remote Controller Display

L8

Applicable Models

RZR, RZQ

Method of Error Detection

The error is detected from the current flowing to power transistor into voltage with CT1 (DC current sensor).

Error Decision Conditions

When compressor overload (except for when startup) is detected.

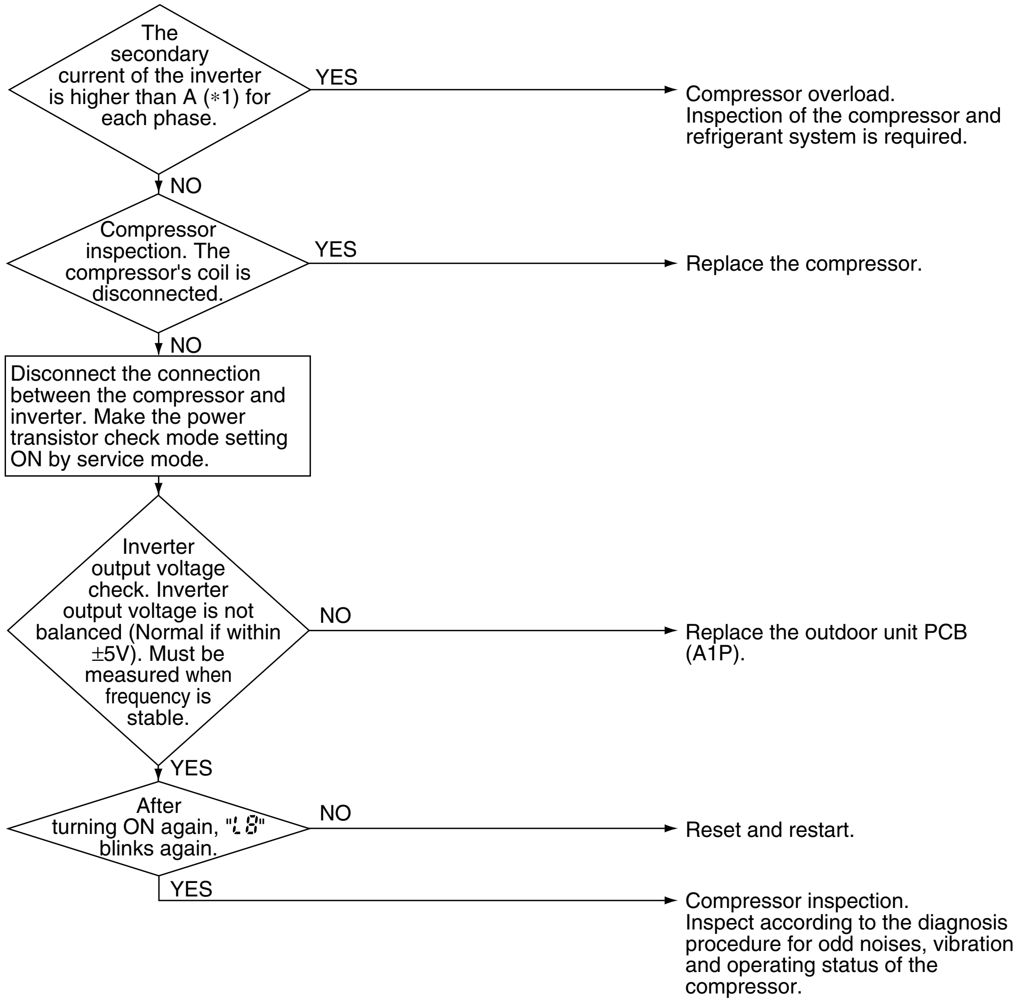
Supposed Causes

- Compressor overload (during operation)
- Disconnected compressor coil
- Defective compressor (if bearing is scratched)
- Defective outdoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

Output current check



Note: ∗1: A (Electronic thermal detection value)

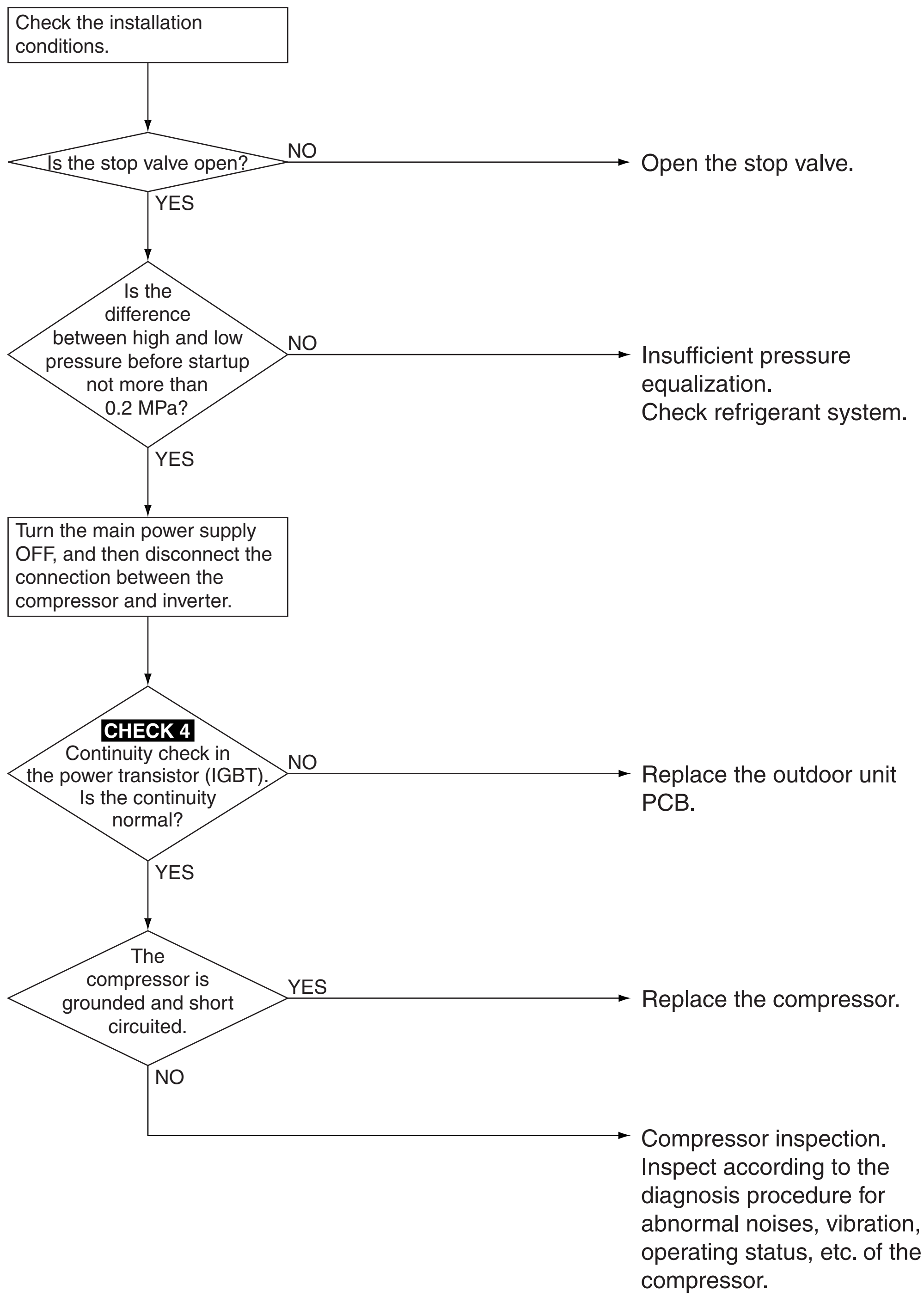
Model	Mode	Detection value
RZQ18,24 P(9) RZQ30P RZR18,24,30P	Cooling	A × seconds 14.8A × 260s or 17.0A × 5s
RZQ36,42P9 RZR36,48P	Cooling	A × seconds 24.9A × 260s or 31.0A × 5s

2.39 Inverter Startup Error

Remote Controller Display	L9
Applicable Models	RZR, RZQ
Method of Error Detection	The error is detected from the current flowing to power transistor into voltage with CT1 (DC current sensor). Inverter PCB detects the disorder of position signal.
Error Decision Conditions	When compressor overload (when startup) is detected
Supposed Causes	■ The stop valve is not opened. ■ Pressure differential startup ■ Defective outdoor unit inverter PCB ■ Defective compressor (lock)

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



CHECK 4 Refer to P.176.

2.40 Transmission Error (between Control and Inverter PCB)

Remote Controller Display

LC

Applicable Models

RZR, RZQ

Method of Error Detection

Check the communication state between inverter PCB and control PCB by micro-computer.

Error Decision Conditions

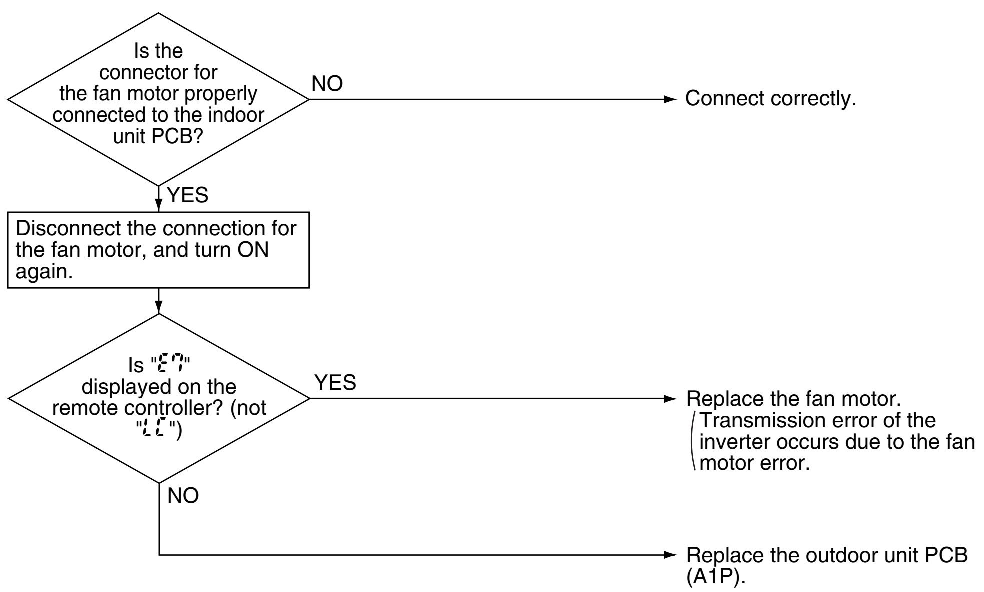
When the correct communication is not carried out in certain period of time or longer

Supposed Causes

- Incorrect transmission wiring between control and inverter PCB/Insufficient contact in wiring
- Defective outdoor unit PCB
- Defective outdoor unit fan motor
- External factor (Noise etc.)
- Defective fan motor connector contact

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.41 Radiation Fin Thermistor Abnormality

Remote Controller Display

P4

Applicable Models

RZR, RZQ

Method of Error Detection

Detection by open or short circuit of the radiation fin thermistor during the compressor stops operating.

Error Decision Conditions

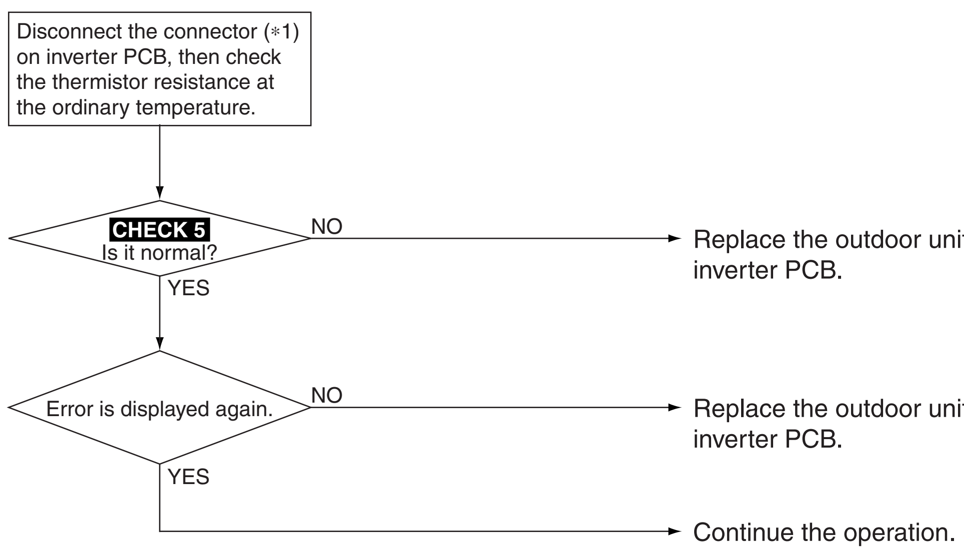
When open or short circuit of the radiation fin thermistor is detected during the compressor stops operating

Supposed Causes

- Defective radiation fin thermistor
- Defective outdoor unit PCB (A1P)
- External factor (Noise, etc.)

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: ∗1. Connector and indoor unit PCB

Connector for radiation fin thermistor	PCB
X111A	A1P

CHECK 5 Refer to P.177, 178.

2.42 Refrigerant Shortage

Remote Controller Display

U0

Applicable Models

RZR, RZQ

Method of Error Detection

Refrigerant shortage is detected according to the electronic expansion valve opening degree and measured temperatures and pressures.

Error Decision Conditions

(In cooling operation)
When the electronic expansion valve opens fully and low pressure is below 14.5 psi continuously for 30 minutes.

(In heating operation)
When the electronic expansion valve opens fully and the suction superheat is large (more than 68°F) continuously for 30 minutes.

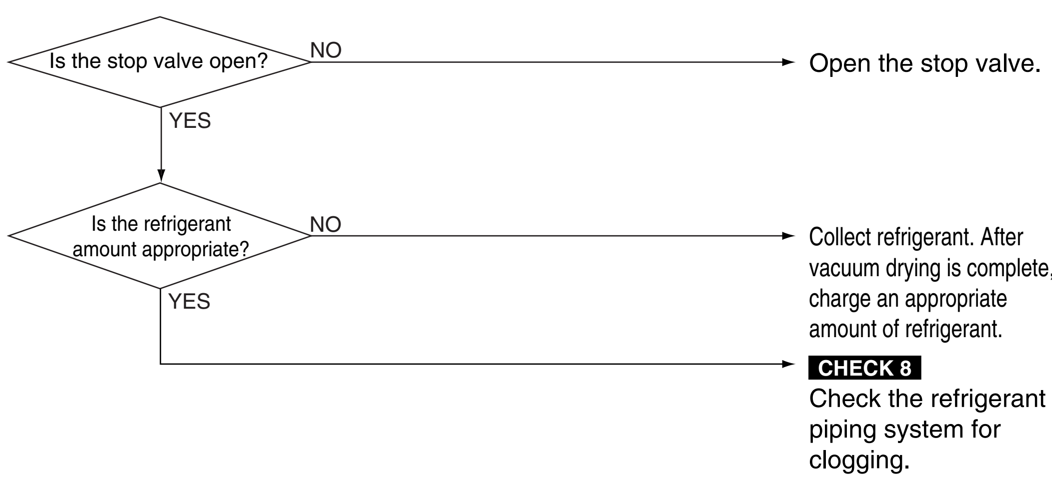
∗ Error code is displayed but the system operates continuously.

Supposed Causes

- The stop valve is not opened.
- Insufficient refrigerant amount
- Clogged refrigerant piping system

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: ∗ Refrigerant shortage alarm is indicated but the operation continues.

CHECK 8 Refer to P.181.

2.43 Power Supply Voltage Abnormality

Remote Controller Display

U2

Applicable Models

RZR, RZQ

Method of Error Detection

The error is detected according to the voltage of main circuit capacitor built in the inverter and power supply voltage.

Error Decision Conditions

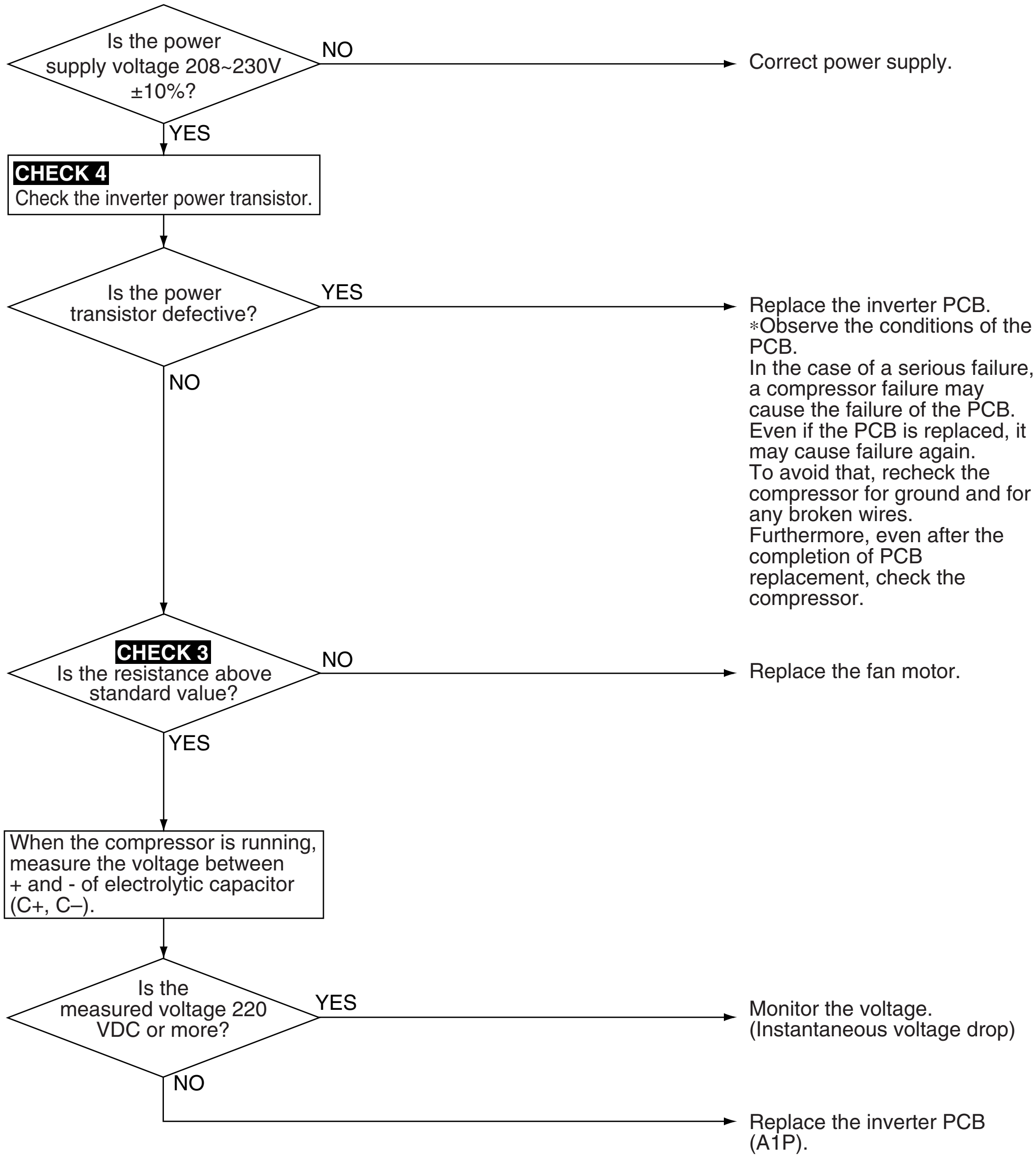
When the abnormal voltage of main circuit capacitor built in the inverter and abnormal power supply voltage are detected

Supposed Causes

- Drop in power supply voltage
- Instantaneous power failure
- Defective outdoor unit fan motor
- Defective outdoor control PCB (A1P)
- Defective main circuit wiring

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



CHECK 3 Refer to P.175.

CHECK 4 Refer to P.176.

2.44 Check Operation not Executed

Remote Controller Display

U3

Applicable Models

RZQ

Method of Error Detection

Check operation is executed or not.

Error Decision Conditions

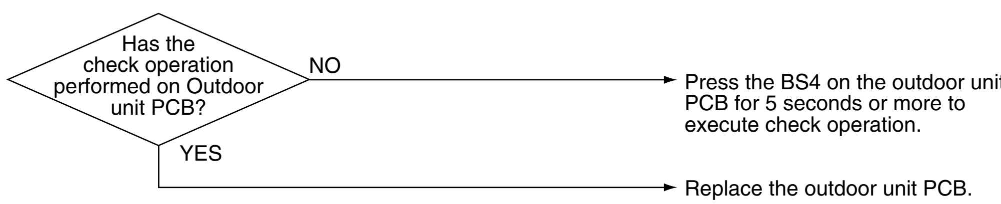
The error is decided when the unit starts operation without check operation.

Supposed Causes

- Check operation is not executed.

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.45 Transmission Error (between Indoor Units and Outdoor Units)

Remote Controller Display

U4

Applicable Models

All indoor models
RZR, RZQ

Method of Error Detection

Micro-computer checks if transmission between indoor and outdoor units is normal.

Error Decision Conditions

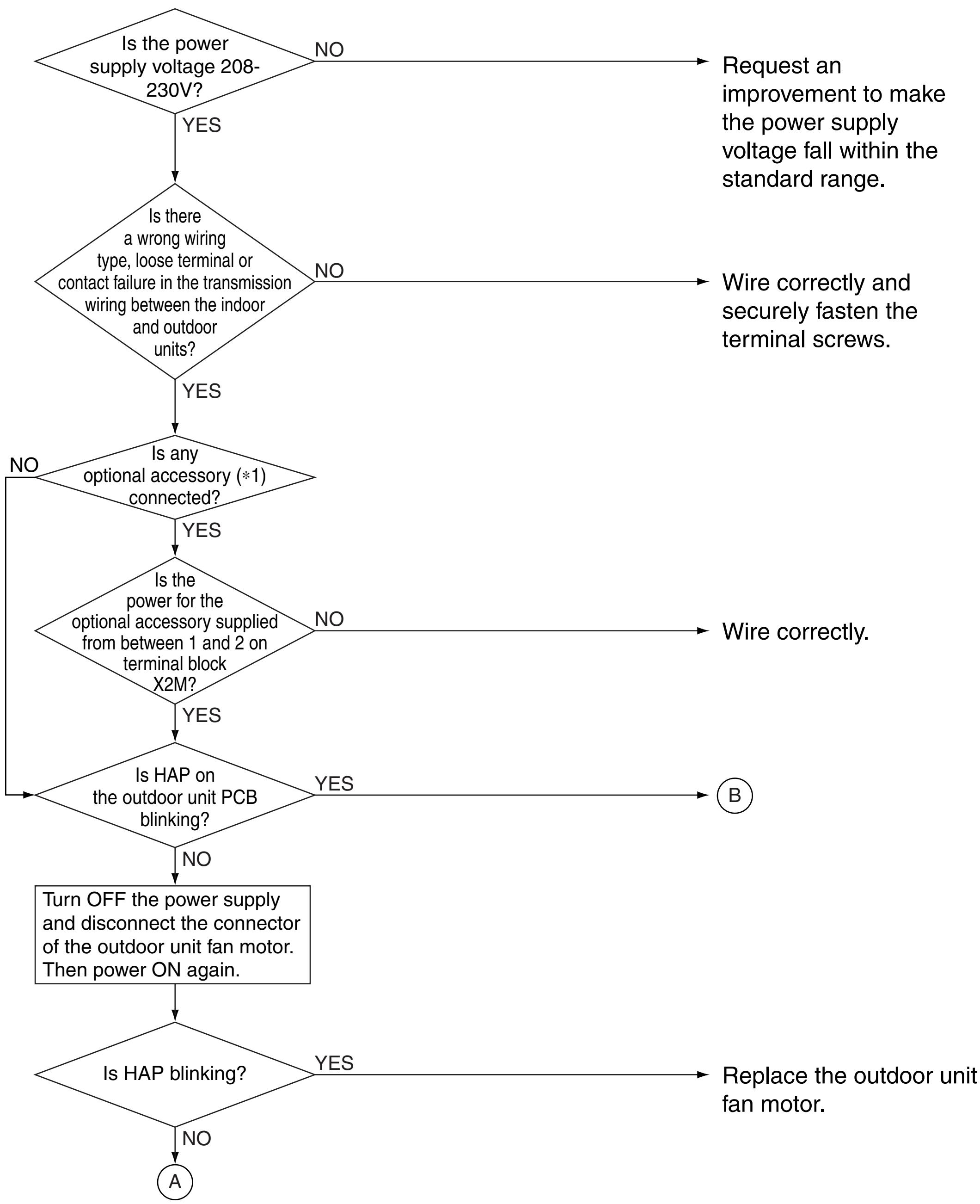
When transmission is not carried out normally for a certain amount of time or longer

Supposed Causes

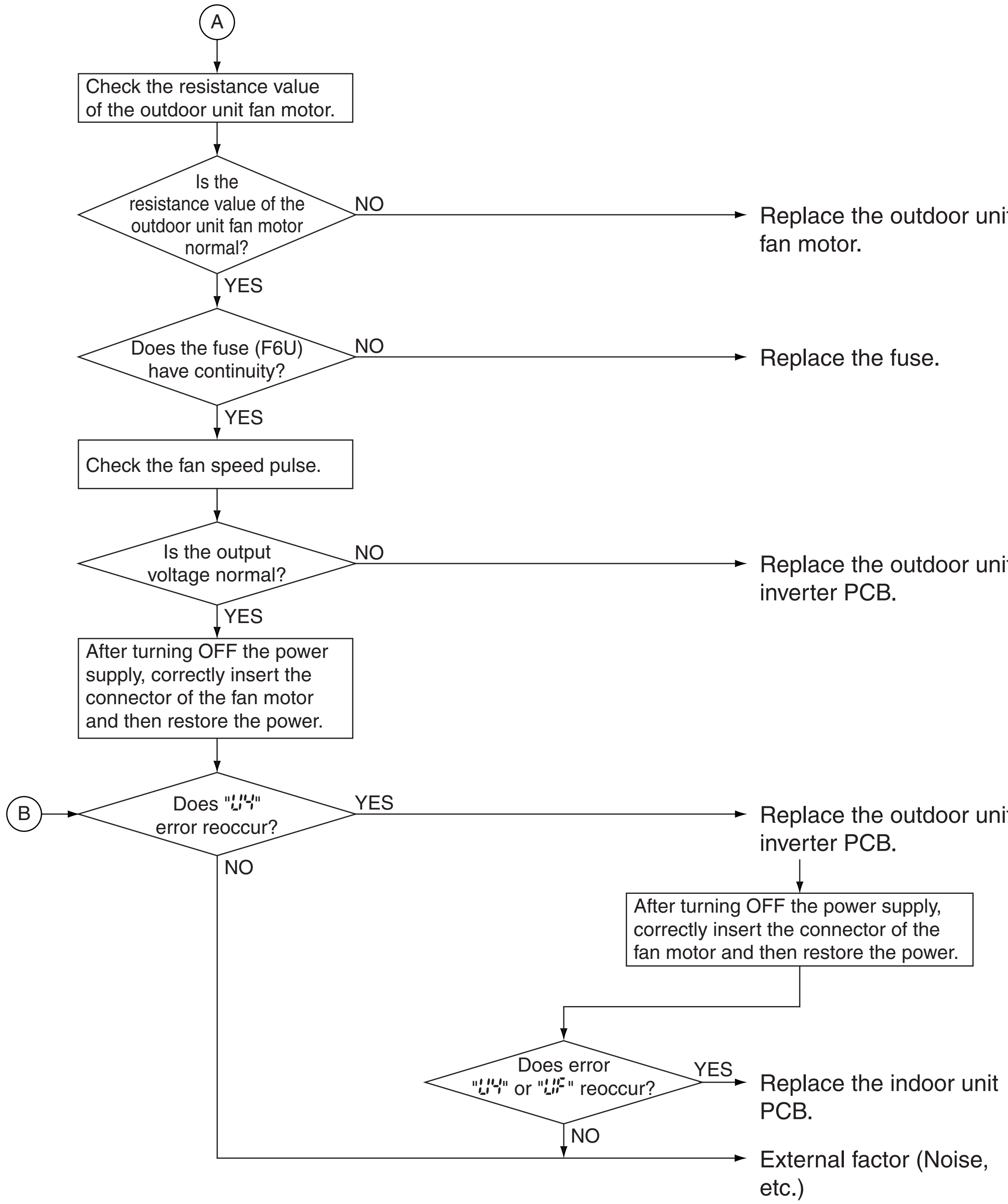
- Wiring indoor-outdoor transmission wire is incorrect.
- Defective power supply
- Burning out fuse
- Defective outdoor unit PCB
- Defective indoor unit PCB
- Defective outdoor unit fan motor
- External factor (Noise, etc.)

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: ∗1 Optional accessories refer to adaptor for wiring, auto grill and other accessories.


A
Check the resistance value of the outdoor unit fan motor.
Is the resistance value of the outdoor unit fan motor normal?
NO
Replace the outdoor unit fan motor.
YES
Does the fuse (F6U) have continuity?
NO
Replace the fuse.
YES
Check the fan speed pulse.
Is the output voltage normal?
NO
Replace the outdoor unit inverter PCB.
YES
After turning OFF the power supply, correctly insert the connector of the fan motor and then restore the power.
B
Does "U4" error reoccur?
YES
Replace the outdoor unit inverter PCB.
After turning OFF the power supply, correctly insert the connector of the fan motor and then restore the power.
NO
Does error "U4" or "UF" reoccur?
YES
Replace the indoor unit PCB.
NO
External factor (Noise, etc.)

2.46 Transmission Error (between Remote Controller and Indoor Unit)

Remote Controller Display

U5

Applicable Models

All indoor models

Method of Error Detection

Micro-computer checks if transmission between indoor unit and remote controller is normal.

Error Decision Conditions

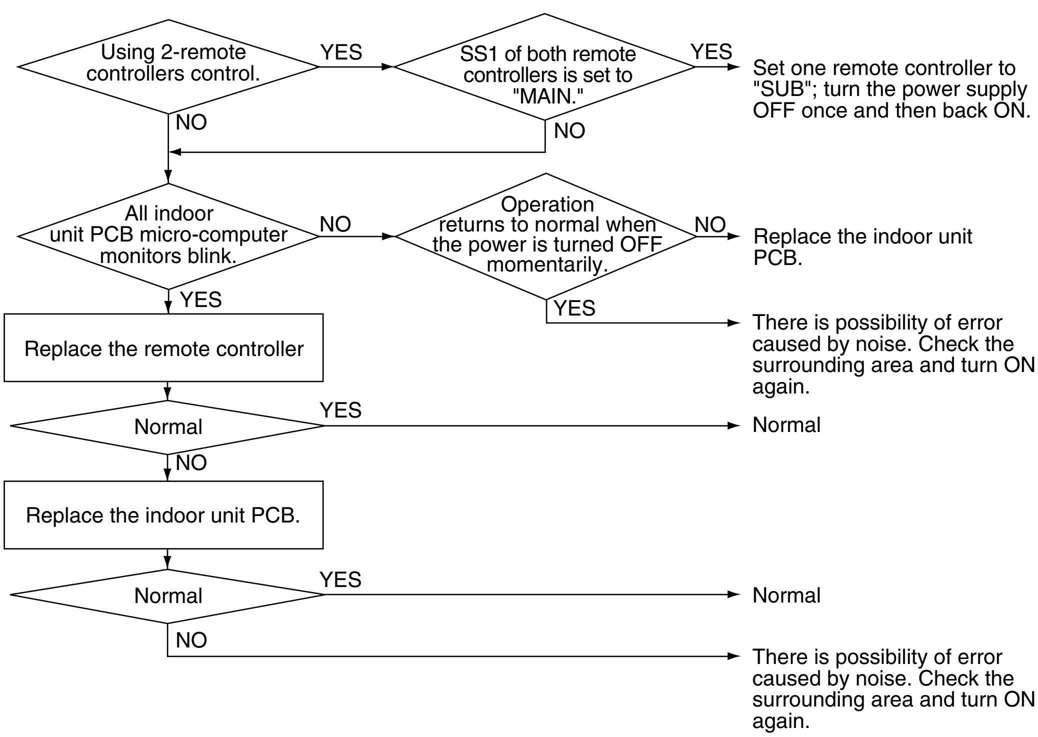
The error is generated when the micro-processor detects that the transmission between the indoor unit and the remote controller is not normal over a certain amount of time.

Supposed Causes

- Connection of 2 main remote controllers (when using 2 remote controllers)
- Defective indoor unit PCB
- Defective remote controller PCB
- External factor (Noise, etc.)

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.47 Transmission Error (between Main and Sub Remote Controllers)

Remote Controller Display

U8

Applicable Models

All indoor models

Method of Error Detection

In case of controlling with 2-remote controller, check the system using micro-computer if signal transmission between indoor unit and remote controller (main and sub) is normal.

Error Decision Conditions

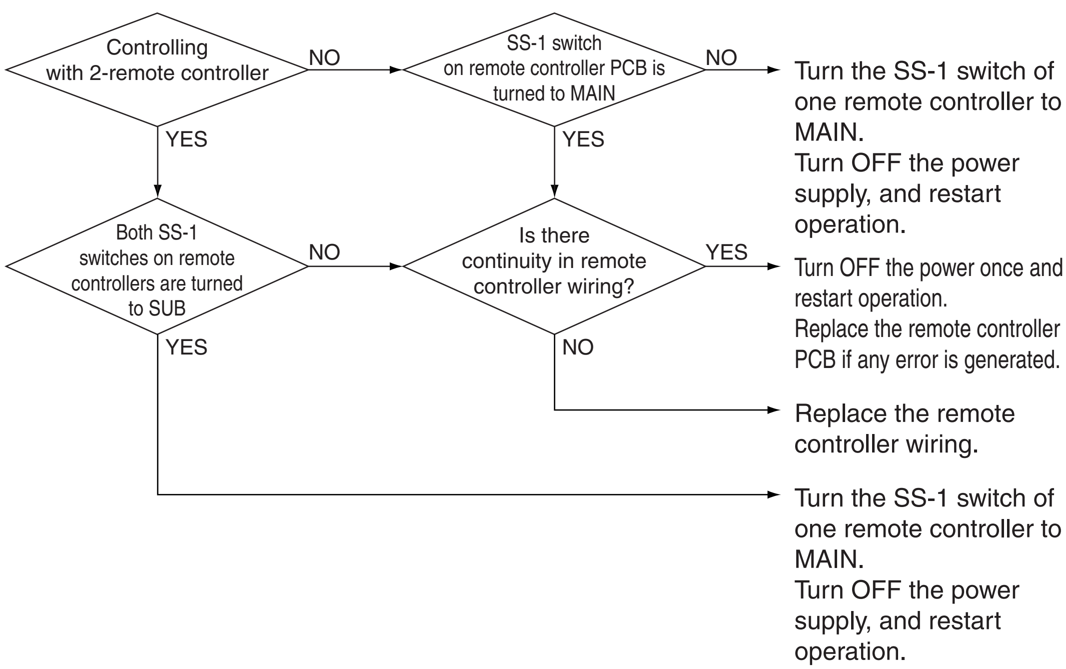
The error is generated when, in case of controlling with 2 remote controllers, the micro-processor detects that the transmission between the indoor unit and the remote controllers (MAIN and SUB) is not normal over a certain amount of time.

Supposed Causes

- Transmission error between main and sub remote controller
- Connection between sub remote controllers
- Defective remote controller PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.48 Transmission Error (between Centralized Remote Controller and Indoor Unit)

Remote Controller Display

UE

Applicable Models

All indoor models
Centralized controller

Method of Error Detection

Micro-computer checks if transmission between indoor unit and centralized remote controller is normal.

Error Decision Conditions

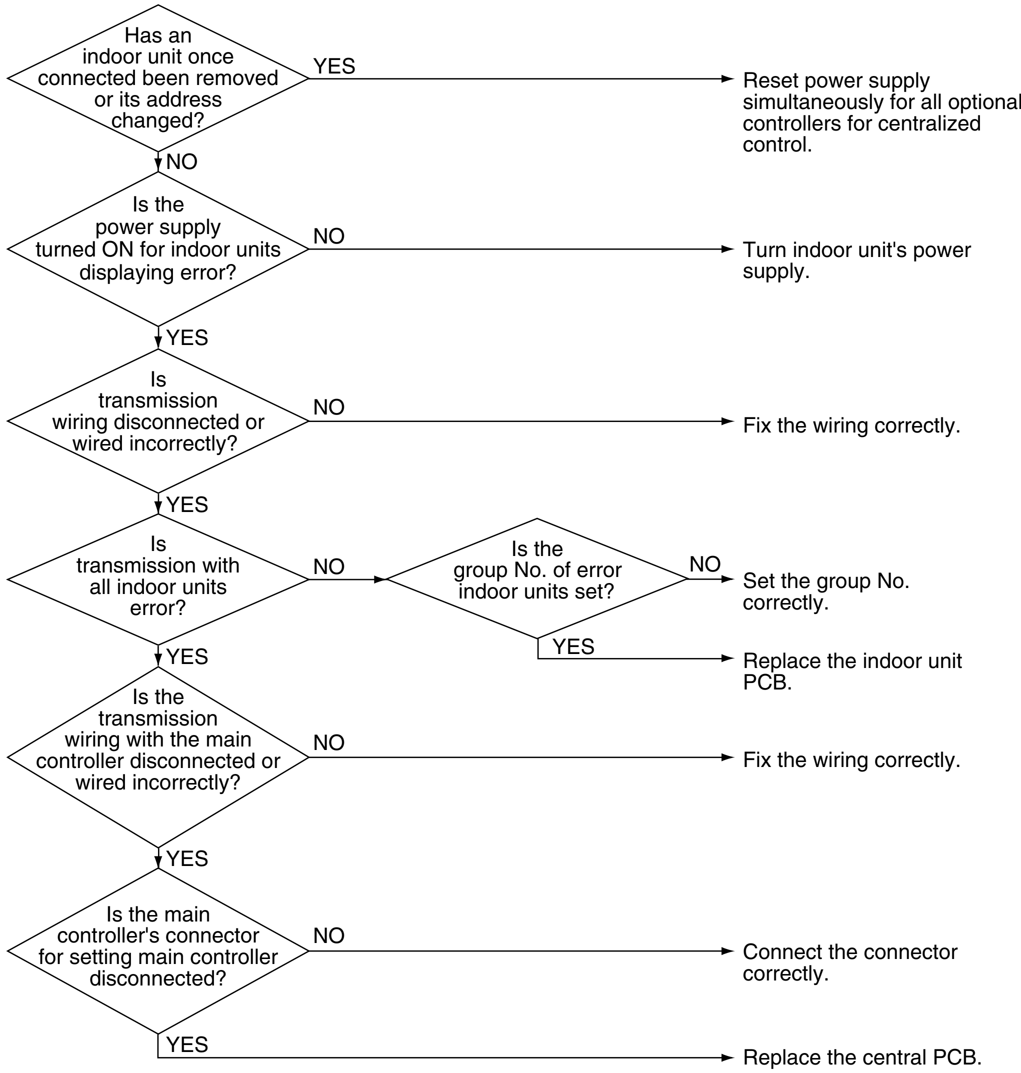
When transmission is not carried out normally for a certain amount of time

Supposed Causes

- Transmission error between optional controllers for centralized control and indoor unit
- Connector for setting main controller is disconnected.
- Defective PCB for centralized remote controller
- Defective indoor unit PCB

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.49 System is not Set yet

Remote Controller Display

UF

Applicable Models

All indoor models
RZR, RZQ

Method of Error Detection

On check operation, the capacity of indoor units in terms of transmission is not corresponding to that of indoor units that have made changes in temperature.

Error Decision Conditions

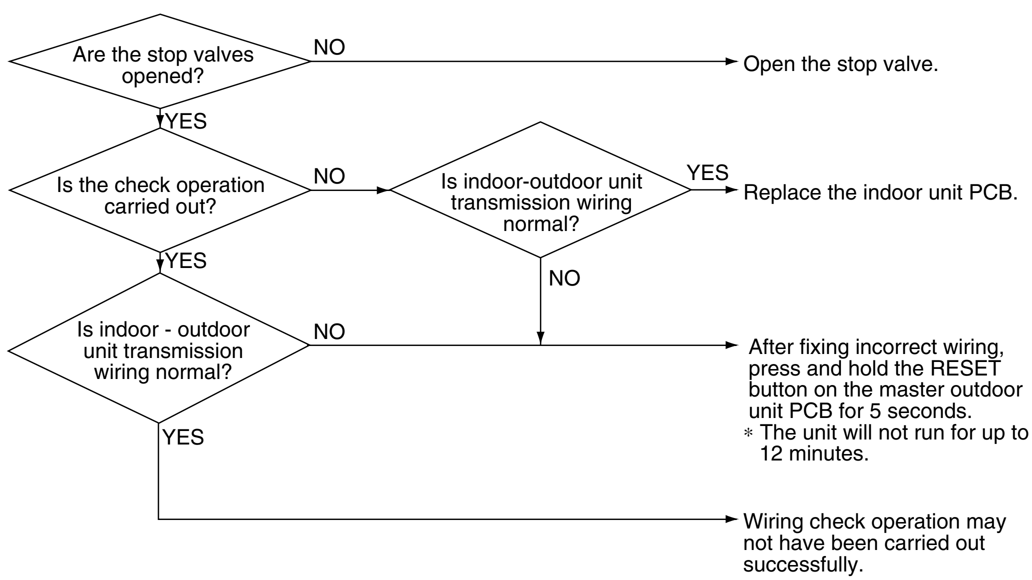
The error is determined as soon as the abnormality aforementioned is detected through checking the system for any erroneous connection of units on the check operation.

Supposed Causes

- Improper connection of transmission wiring between indoor-outdoor units
- Failure to execute check operation
- Defective indoor unit PCB
- Stop valve is not opened.

Troubleshooting

Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

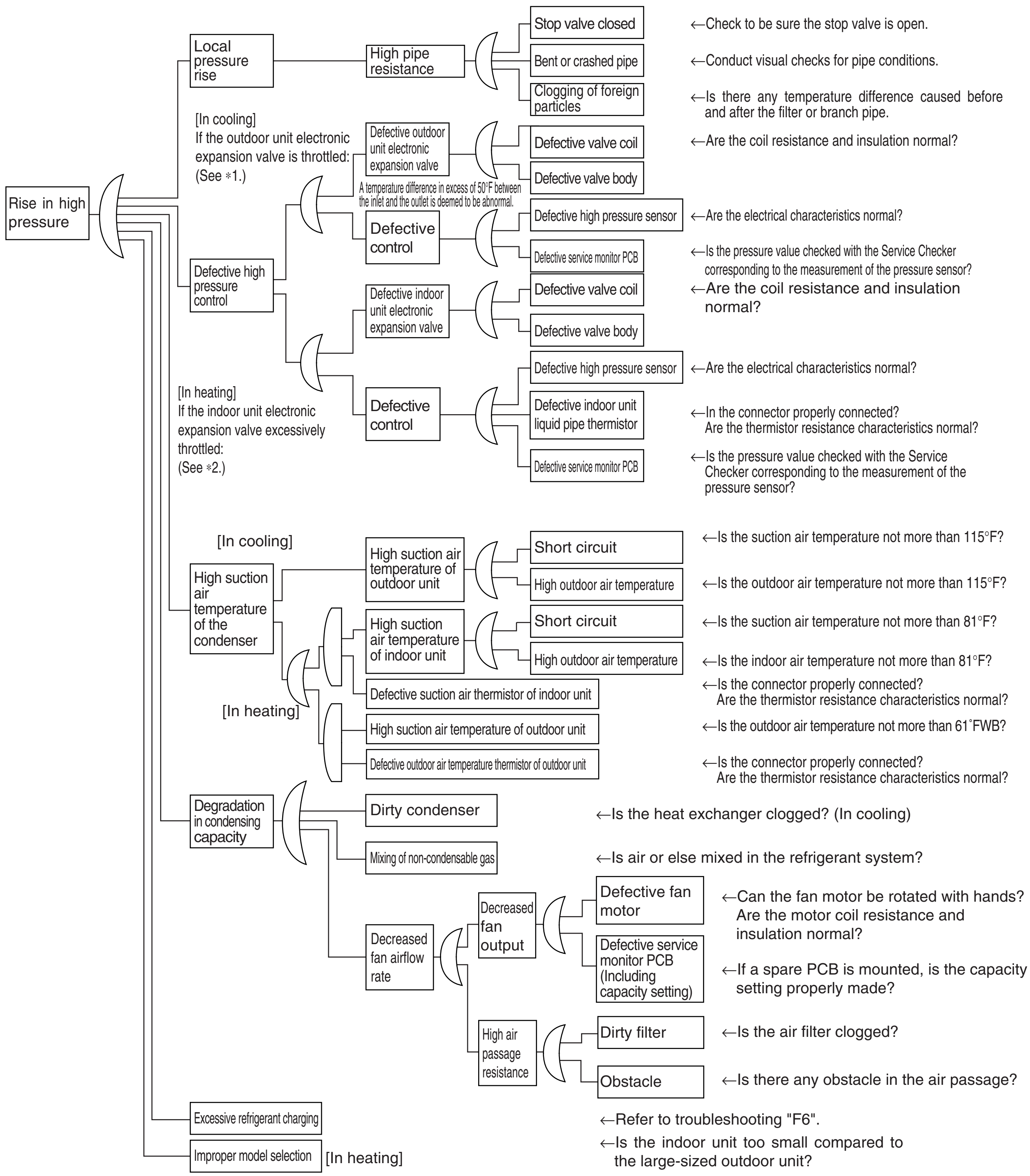


Note: Wiring check operation may not be successful if carried out after the outdoor unit has been OFF for more than 12 hours, or if it is not carried out after running all connected indoor units in the fan mode for at least an hour.

2.50 Check

CHECK 1 Check for causes of rise in high pressure

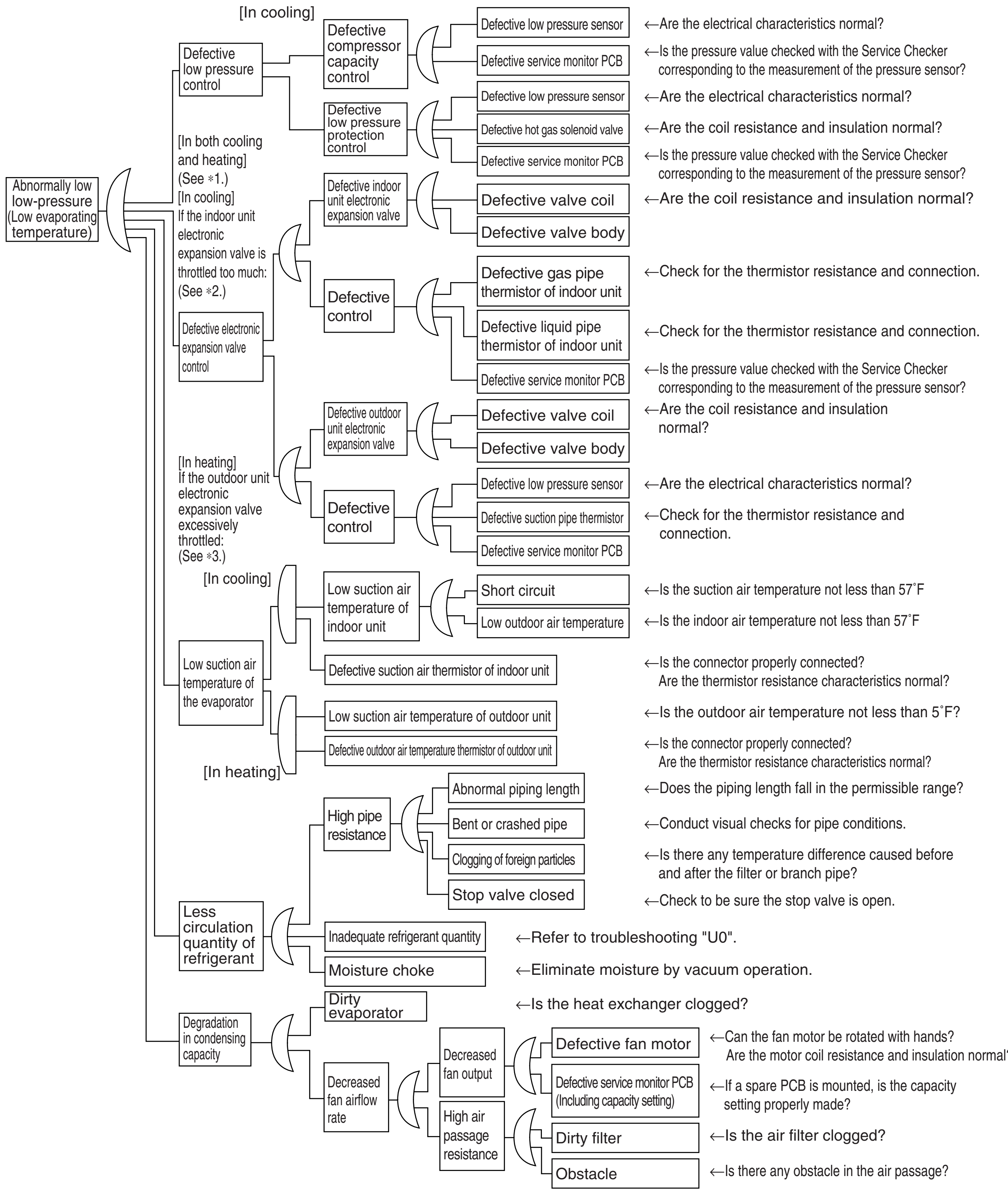
Referring to the Fault Tree Analysis (FTA) shown below, probe the error points.



Note: ∗1: In cooling, it is normal if the outdoor unit electronic expansion valve (EV1) is fully open.
∗2: In heating, the indoor unit electronic expansion valve is used for “subcooling degree control”.

CHECK 2 Check for causes of drop in low pressure

Referring to the Fault Tree Analysis (FTA) shown below, probe the error points.

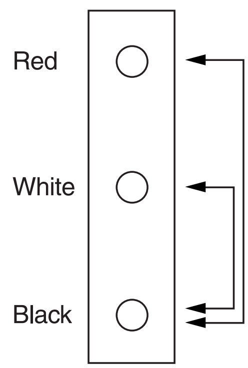


Note:

*1: The “low pressure protection control” includes low pressure protection control and hot gas bypass control.
*2: In cooling, the indoor unit electronic expansion valve is used for “superheated degree control”.
*3: In heating, the outdoor unit electronic expansion valve (EV1) is used for “superheated degree control of outdoor unit heat exchanger”.

CHECK 3 Check for Fan Motor Connector

Check on connector of fan motor (Power supply cable)
Turn OFF the power supply.
Measure the resistance between phases of U, V, W at the motor side connectors (three-core wire) to check that the values are balanced and there is no short circuiting, while connector or relay connector is disconnected.



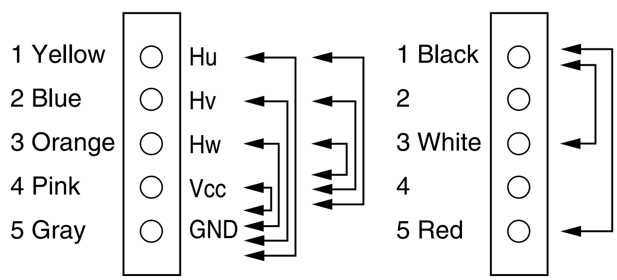
<FHQ18~42MVJU>

Measuring Points	Judgement
Black - Red	53.5Ω ± 10%
Black - White	31.6Ω ± 10%

<FBQ18~42PVJU>

Measuring Points	Judgement
Black - Red	3.5Ω ± 10%
Black - White	3.5Ω ± 10%

FTQ



Measuring Points	Judgement
Black - Red	6.1Ω ± 10%
Black - White	6.1Ω ± 10%

Note: Check on connector of fan motor is not available for below models.
FCQ18~42PAVJU, FAQ18 · 24PVJU

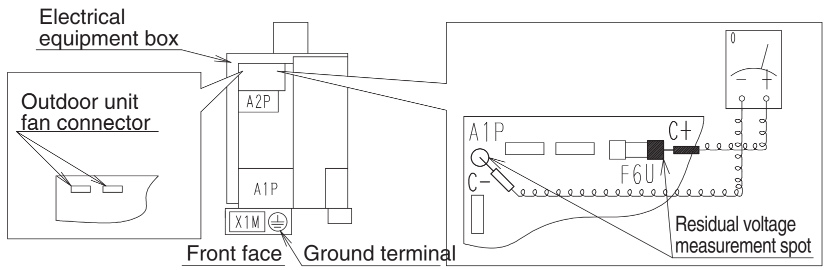
CHECK 4 Check for Power Transistor

Judgement is made through cable check with an analog tester.

(1) Do not touch the energized part (high voltage part) for at least 10 minutes after the power is turned OFF.

(2) Be sure to touch the ground terminal with a hand to release static electricity from the body (to prevent PCB from being damaged).

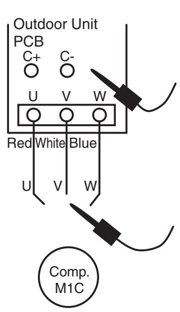
(3) Also with a tester, take measurements at the following spots and confirm that residual electric charge of the power transistor is DC 50V or less.



(4) After checking the residual electric charge, remove the connector of the outdoor unit fan motor. When the outdoor unit fan is rotated by strong headwind, remove the connector of the outdoor unit fan motor after confirming that the outdoor unit fan has stopped because electrical energy is stored in the capacitor and there may be a risk of electric shock.

(5) Remove the wire connecting the power transistor and the compressor. Remove it from the compressor terminal side.
During this work, be careful not to deform Faston terminal at the end of the relay wire.

(6) Using an analog tester, measure resistance and fill in the blanks in the following table.
In case of unbalanced resistance for one of the 3 phases in each table (when the resistance value is equal to 5 times or more than the other resistance values), the power transistor is broken.
In normal cases, each phase shows a similar resistance value.



Tester		Resistance
(+)	(-)	Ω
C+	U	
C+	V	
C+	W	
U	C+	∞
V	C+	∞
W	C+	∞

Tester		Resistance
(+)	(-)	Ω
C-	U	∞
C-	V	∞
C-	W	∞
U	C-	
V	C-	
W	C-	

CHECK 5 Check the Thermistors

Thermistors

If the cause of the problem is related to the thermistors, then the thermistors should be checked prior to changing the PCB.

For more information about these thermistors, see:

■ "Wiring Diagrams" on P.187

Overview of Thermistors

The table below contains an overview of the thermistors:

Indoor

FCQ	FHQ	FAQ	FBQ	FTQ	Thermistor	Table (on following page)
R1T	R1T	R1T	R1T	—	Suction air thermistor	2
R2T	R2T	R2T	R2T	R1T	Heat exchanger liquid pipe thermistor	2
R3T	R3T	R3T	R3T	R2T	Heat exchanger gas pipe thermistor	2
—	—	—	R4T	—	Discharge air thermistor	3
—	—	—	R5T	—	NTC thermistor	2

Outdoor

RZR18-30 RZQ18-30	RZR36·42 RZQ36·42	Thermistor	Table (on following page)
R1T	R1T	Outdoor air thermistor	2
R2T	R2T	Discharge pipe thermistor	3
R3T, R5T	R3T, R5T	Suction pipe thermistor	2
R4T	R4T	Heat exchanger thermistor	2
—	R6T	Subcooling heat exchanger thermistor	2
—	R7T	Liquid pipe thermistor	2
R10T	FINTH	Radiation fin thermistor	1

Checking

To check the thermistors, proceed as follows:

Step	Action
1	Disconnect the thermistor from the PCB
2	Read the temperature and the resistor value.
3	Check if the measured values correspond with the values in the table on the next pages.

Thermistor Resistance / Temperature Characteristics

Table 1

T°F	kΩ
-22	354.1
-13	259.7
-4	192.6
5	144.2
14	109.1
23	83.25
32	64.10
41	49.70
50	38.85
59	30.61
68	24.29
77	19.41
86	15.61
95	12.64
104	10.30
113	8.439
122	6.954
131	5.761
140	4.797
149	4.014
158	3.375
167	2.851
176	2.418
185	2.060
194	1.762
203	1.513
212	1.304
221	1.128
230	0.9790
239	0.8527
248	0.7450
257	0.6530
266	0.5741

3PA61998L (AD92A057)

Table 2

T°F	kΩ
-22	361.7719
-13	265.4704
-4	196.9198
5	147.5687
14	111.6578
23	85.2610
32	65.6705
41	50.9947
50	39.9149
59	31.4796
68	25.0060
77	20.0000
86	16.1008
95	13.0426
104	10.6281
113	8.7097
122	7.1764
131	5.9407
140	4.9439
149	4.1352
158	3.4757
167	2.9349
176	2.4894
185	2.1205
194	1.8138
203	1.5575
212	1.3425
221	1.1614

3SA48001 (AD87A001J)

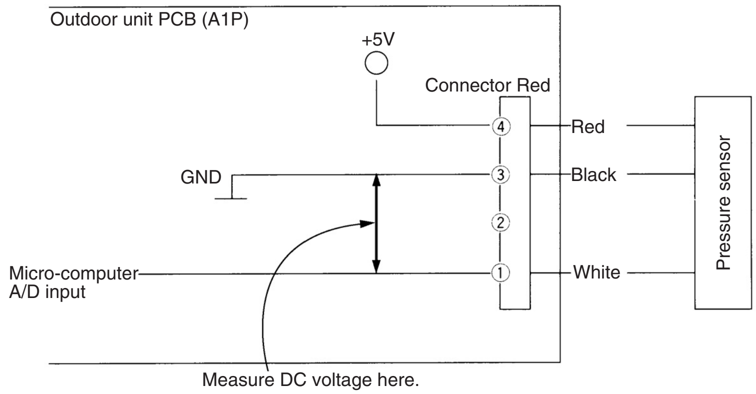
Table 3

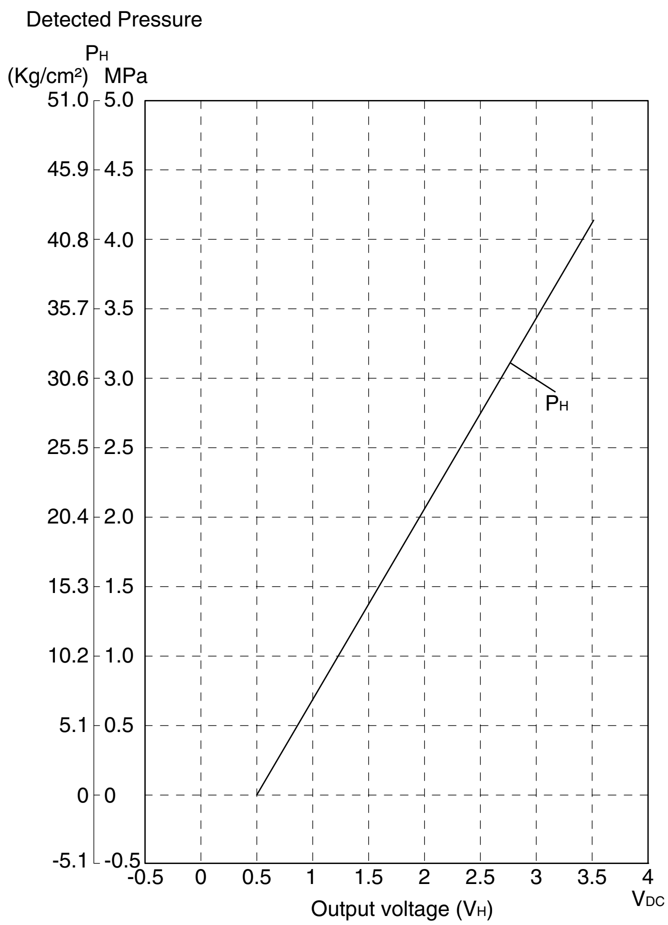
T°F	kΩ
-22	3257.371
-13	2429.222
-4	1827.883
5	1387.099
14	1061.098
23	817.9329
32	635.0831
41	496.5712
50	391.0070
59	309.9511
68	247.2696
77	198.4674
86	160.2244
95	130.0697
104	106.1517
113	87.0725
122	71.7703
131	59.4735
140	49.5180
149	41.4168
158	34.7923
167	29.3499
176	24.8586
185	21.1360
194	18.0377
203	15.4487
212	13.2768
221	11.4395
230	9.8902
239	8.5788
248	7.4650
257	6.5156
266	5.7038
275	5.0073
284	4.4080
293	3.8907
302	3.4429

3SA48006 (AD87A001J)

CHECK 6 Check Pressure Sensor

Measure the voltage (DC) between pins 1 and 3 of the connector.



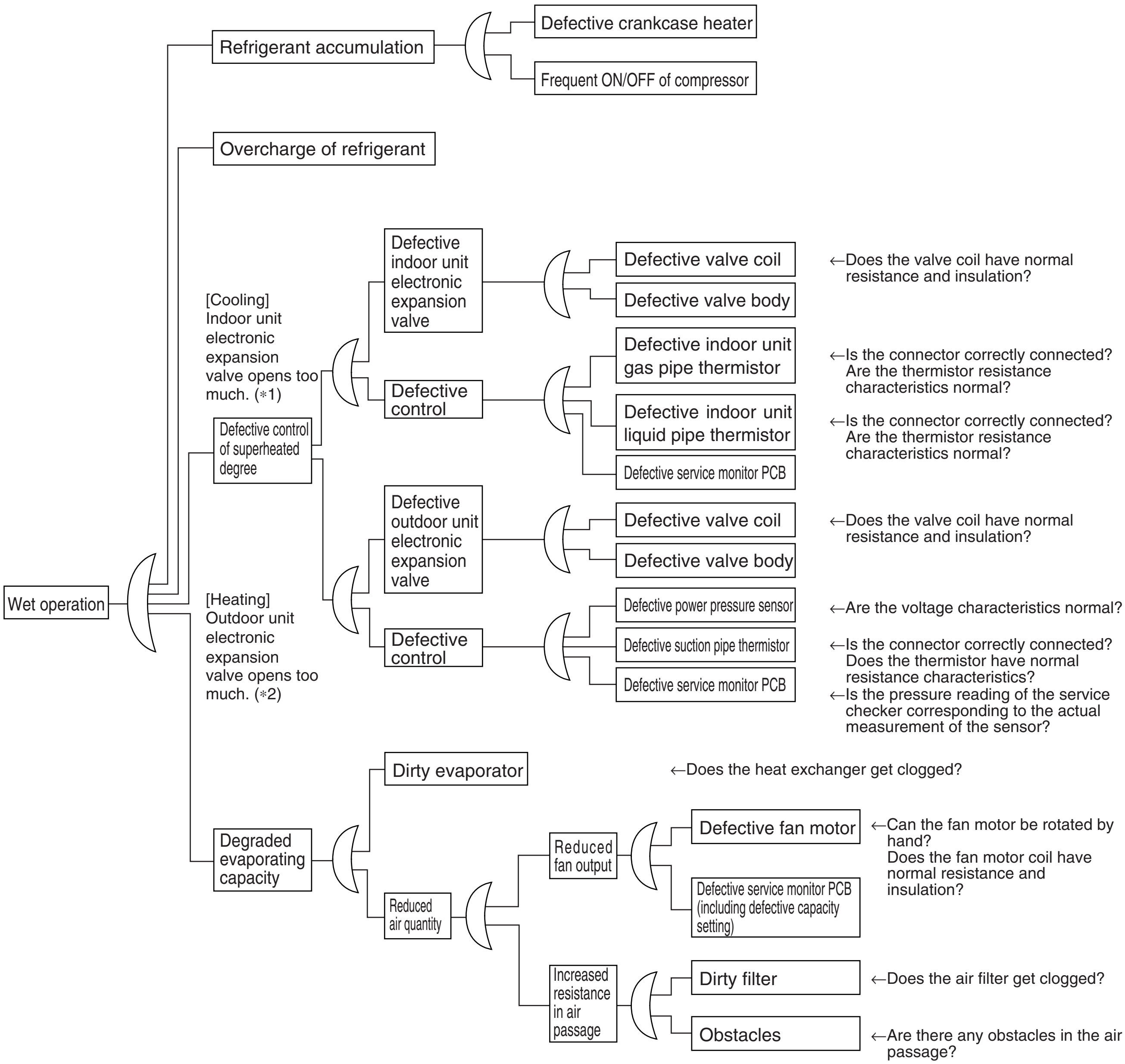


$P_H = 1.38V_H - 0.69$
P_H : Detected pressure (MPa)
V_H : Output voltage (V)

This graph is available for both high pressure sensor and low pressure sensor.

CHECK 7 **Check for causes of wet operation.**

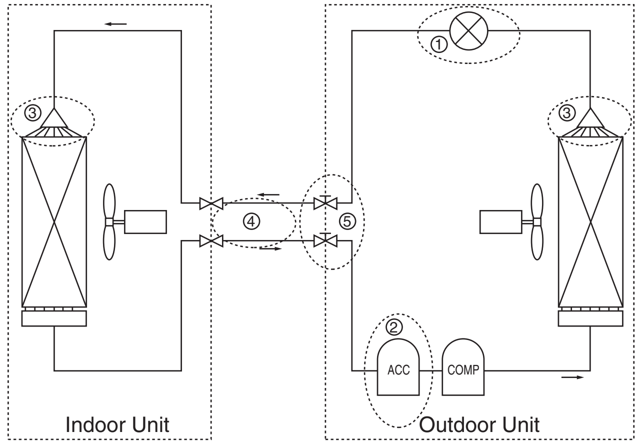
Referring to the Fault Tree Analysis (FTA) shown below, identify defective points.



*1: "Superheated degree control" in cooling operation is exercised with the indoor unit electronic expansion valve.
*2: "Superheated degree control" in heating operation is exercised with the outdoor unit electronic expansion valve (EV1).
*3: Guideline of superheated degree to judge as wet operation
①Suction gas superheated degree: Not more than 37.4°F; ②Discharge gas superheated degree: Not more than 59°F, except immediately after compressor starts up or is running under drooping control.
(Use the values shown above as a guideline. Even if the superheated degree falls in the range, the compressor may be normal depending on other conditions.)

CHECK 8 Clogged Points

Temperature differences must occur before or after the clogged points!



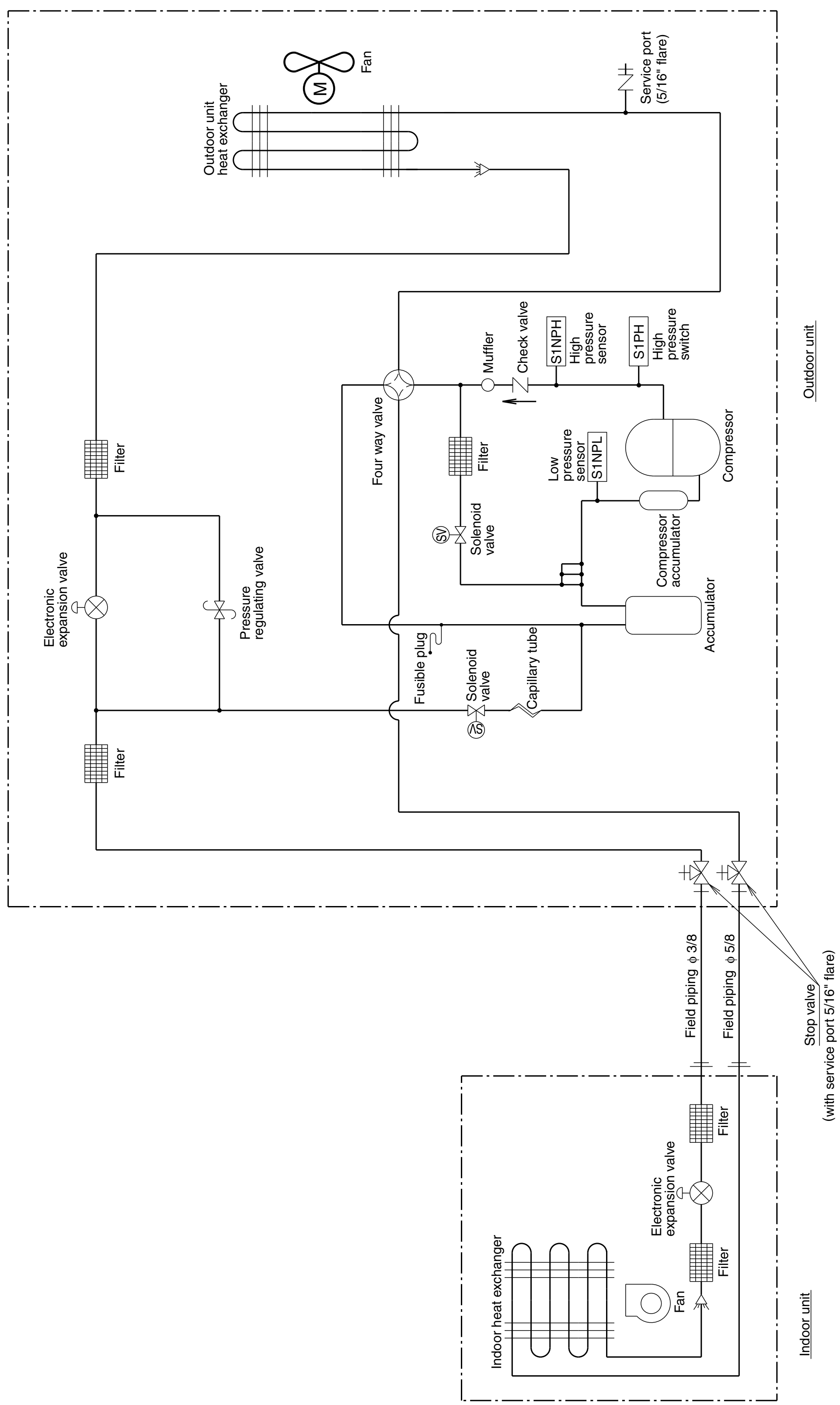
Check points		Check factor	Causes	Remedies
1	Around expansion mechanism	Temperature difference	● Dust ● Choked moisture ● Reduced effective pipe diameter due to adherent contamination, etc.	Replace the electronic expansion valve.
2	Accumulator	Frosting	● Choked moisture	Blow a nitrogen gas, and then replace the refrigerant.
3	Distributor	Temperature difference	● Dust ● Choked moisture ● Reduced effective pipe diameter due to adherent contamination, etc.	Replace the heat exchanger or distributor.
4	Field piping	Temperature difference	● Collapsed pipe	Replace the pipe.
5	Stop valve	Temperature difference	● The stop valve is not fully open.	Open the stop valve fully.

Part 7
Appendix

1. Piping Diagrams

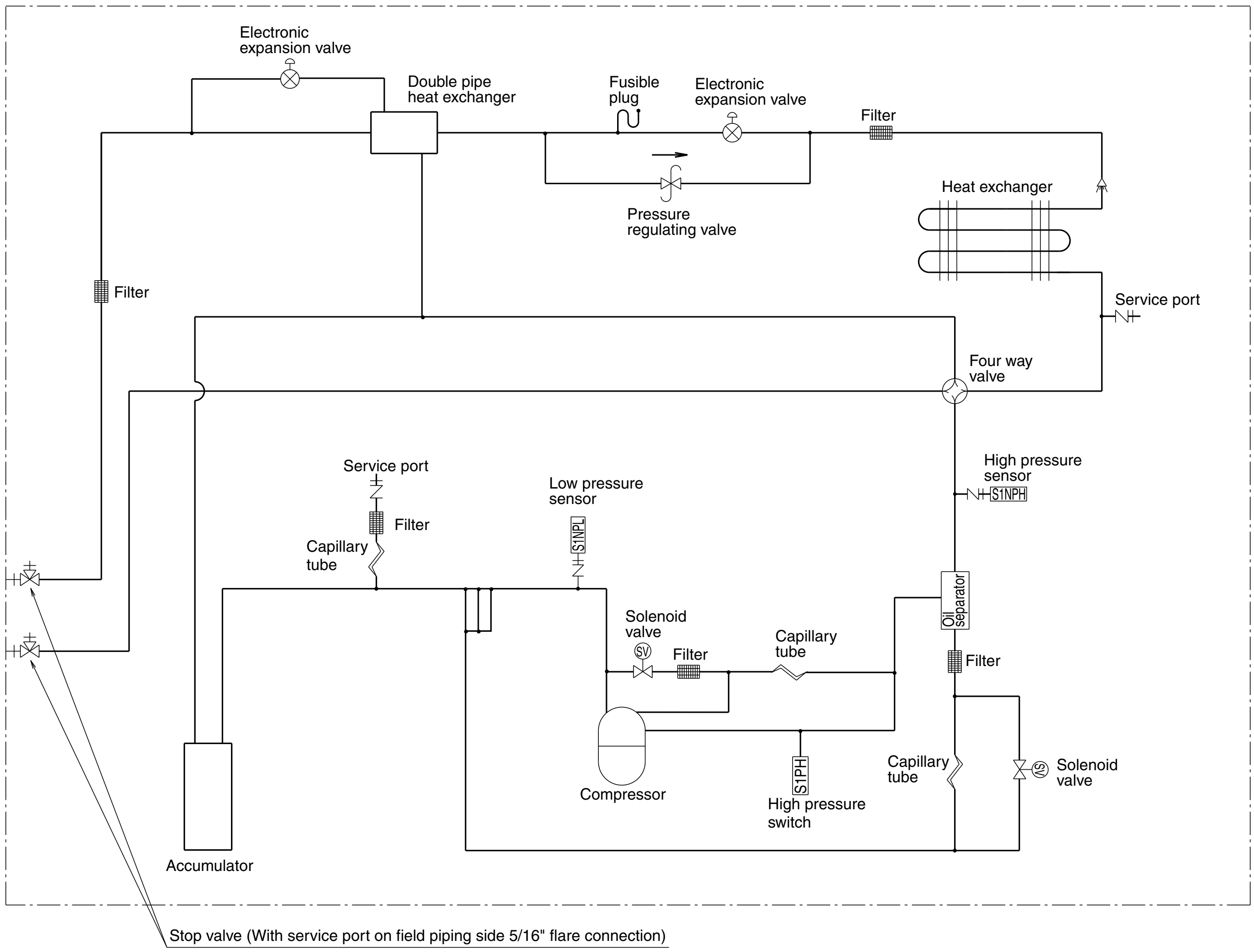
1.1 Indoor Unit + Outdoor Unit

FCQ18PAVJU / FHQ18PVJU / FAQ18PVJU / FBQ18PVJU + RZR18PVJU / RZQ18PVJU9
FCQ24PAVJU / FHQ24PVJU / FAQ24PVJU / FBQ24PVJU + RZR24PVJU / RZQ24PVJU9
FCQ30PAVJU / FHQ30PVJU / FBQ30PVJU + RZR30PVJU / RZQ30PVJU



C: 3D062238C

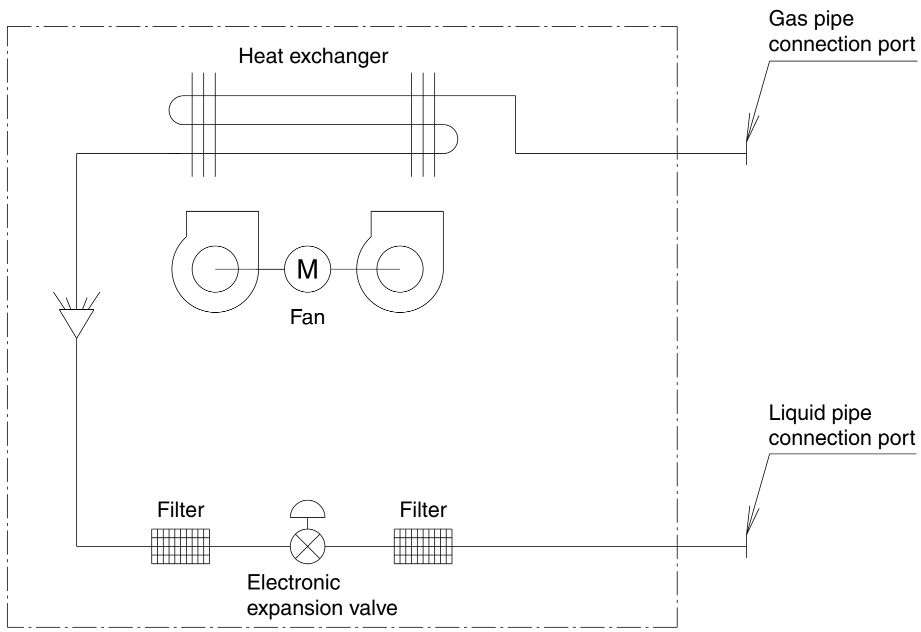
RZQ36PVJU9 / RZR36PVJU
RZQ42PVJU9 / RZR42PVJU



3D065366A

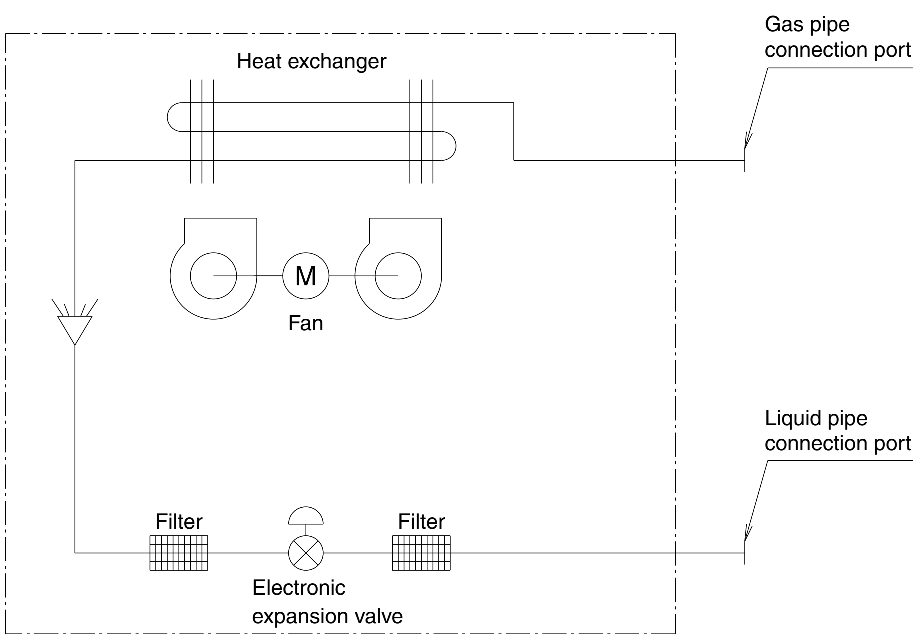
1.2 Indoor Unit

FCQ36PAVJU / FCQ42PAVJU
FHQ36MVJU / FHQ42MVJU



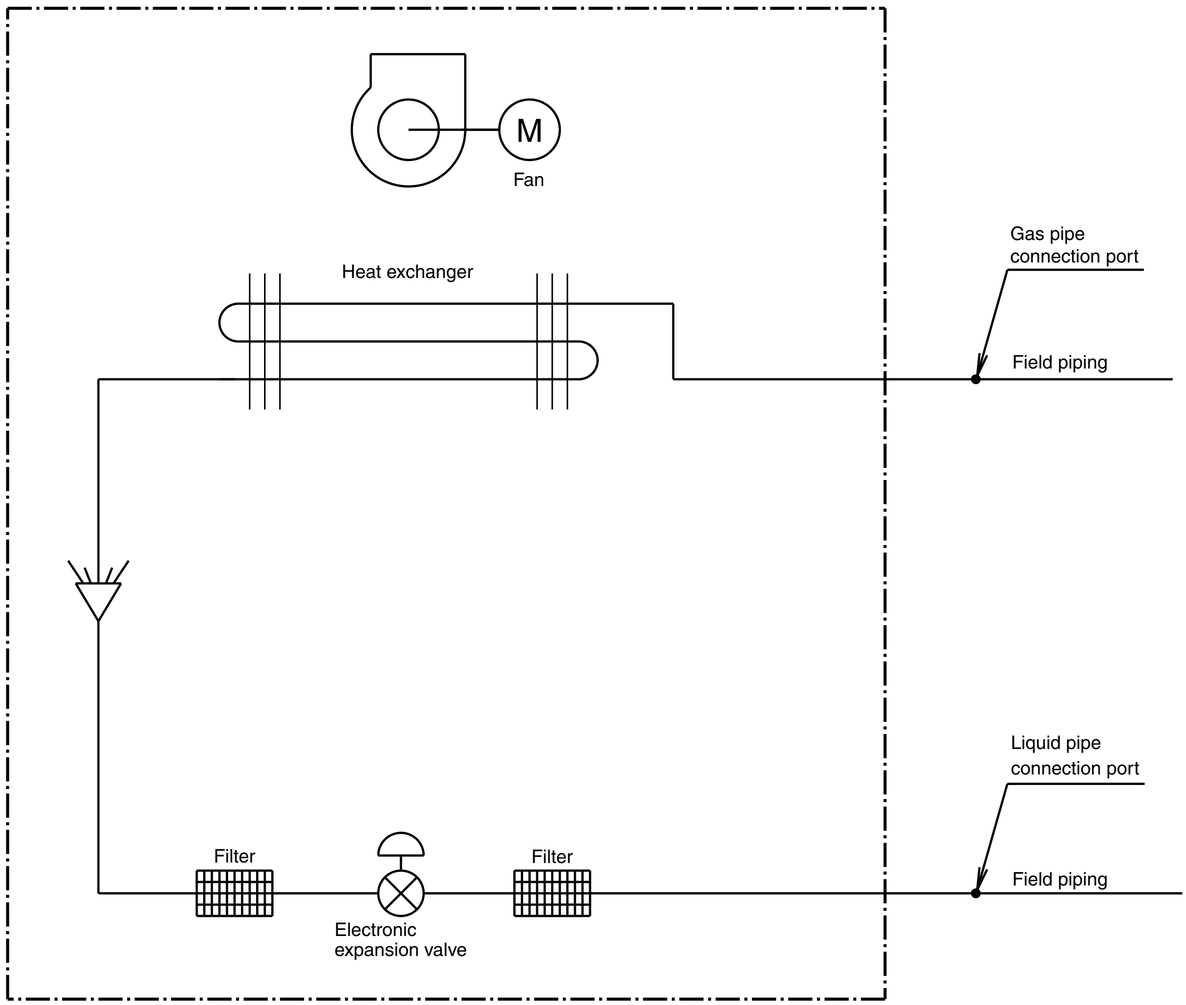
4D024460F

FBQ36PVJU / FBQ42PVJU



4D034245F

FTQ18PAVJU
FTQ24PAVJU

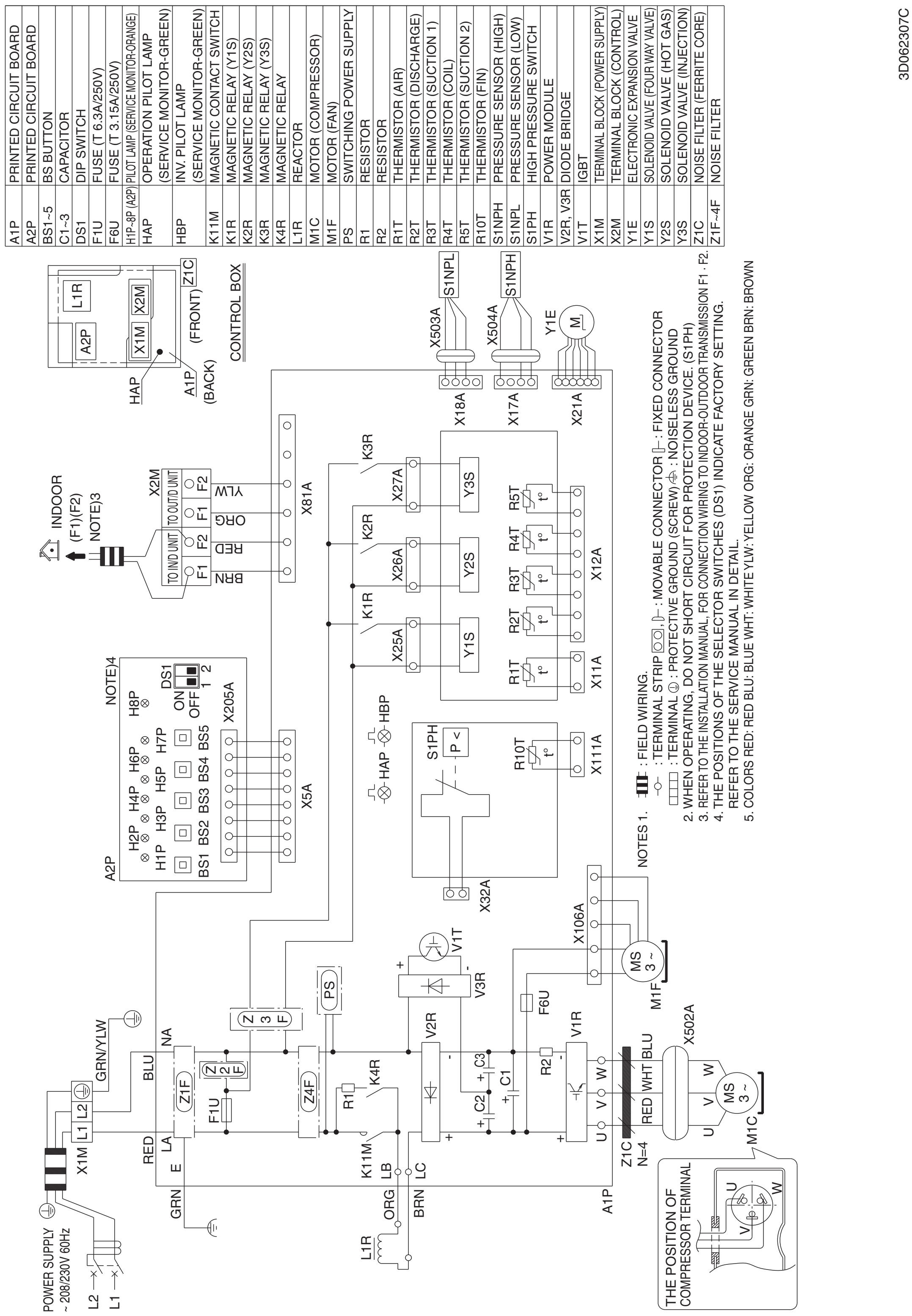


C: 4D068194

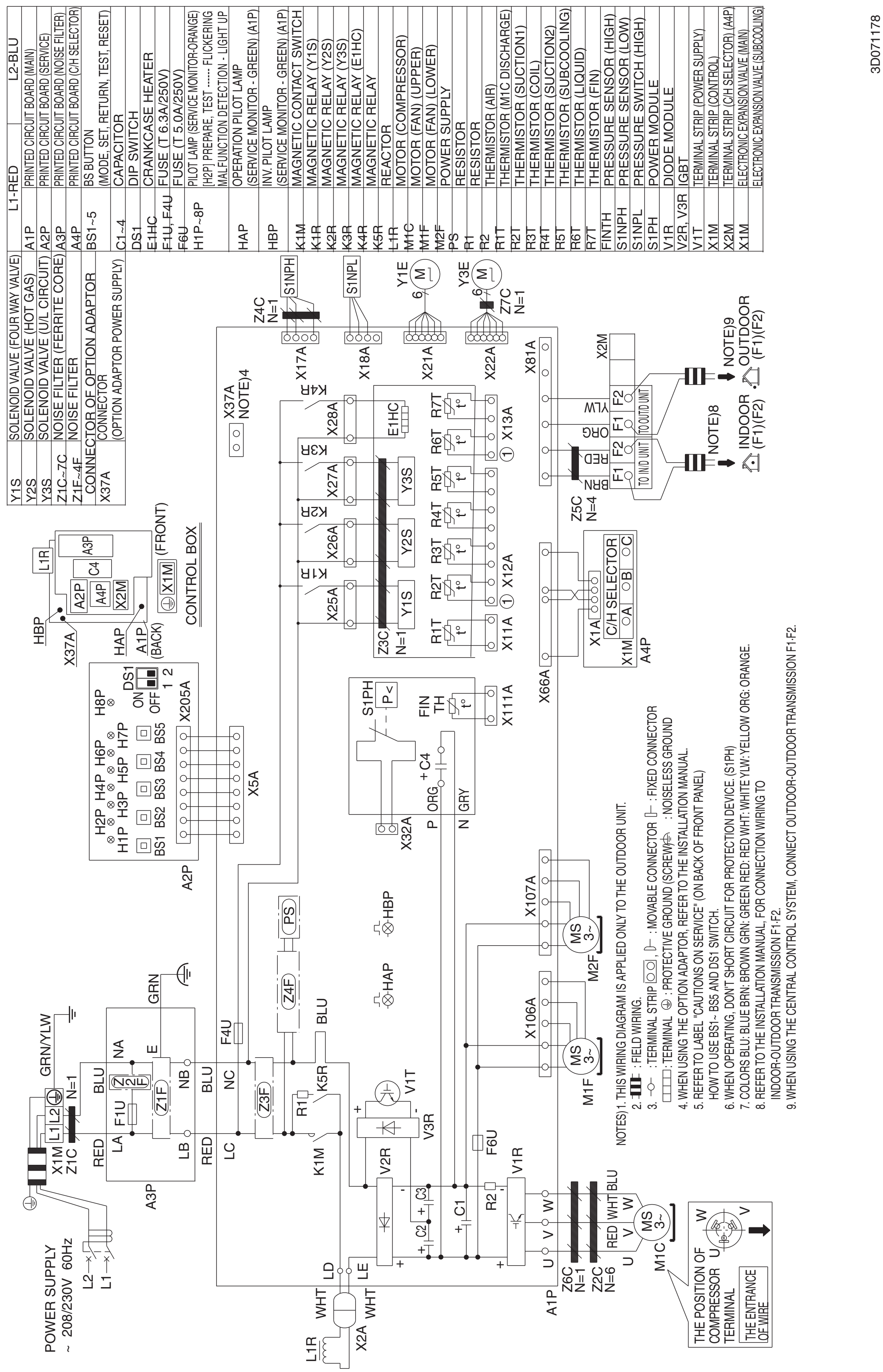
2. Wiring Diagrams

2.1 Outdoor Unit

RZR18PVJU / RZR24PVJU / RZR30PVJU
RZQ18PVJU9 / RZQ24PVJU9 / RZQ30PVJU

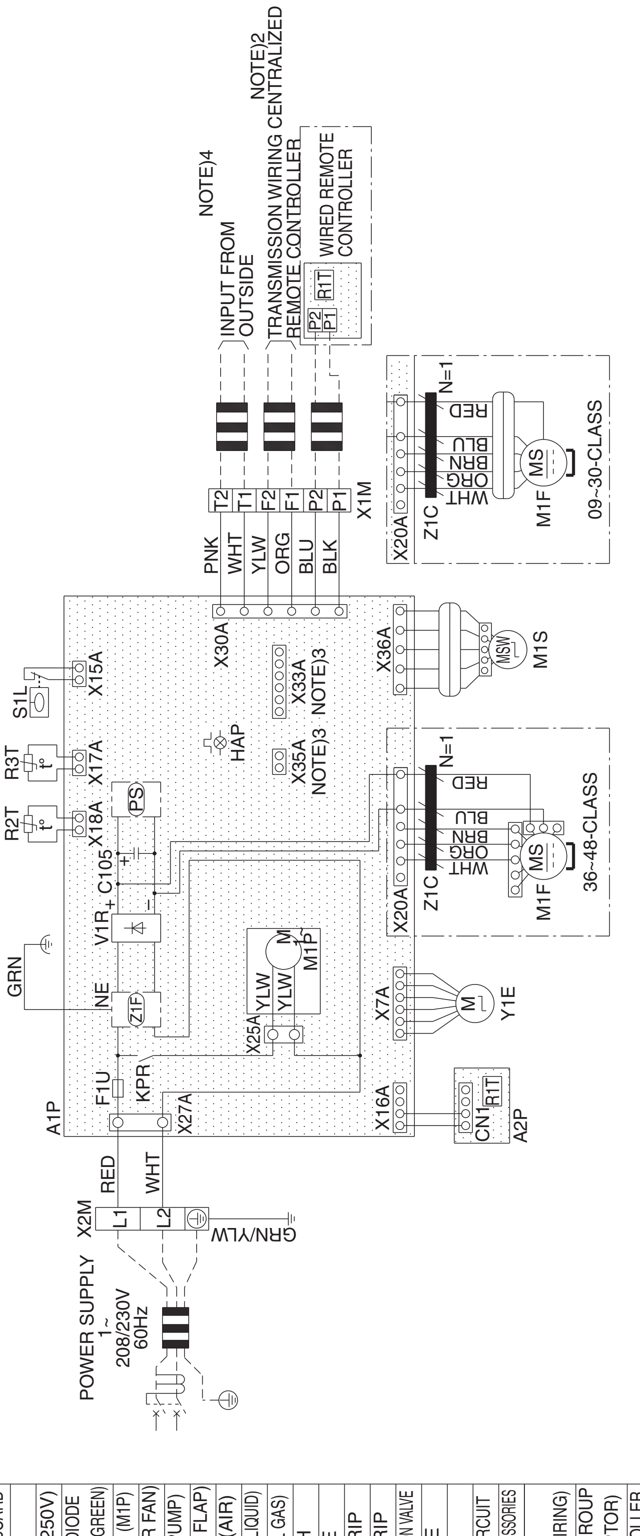


RZR36PVJU / RZR42PVJU
RZQ36PVJU9 / RZQ42PVJU9

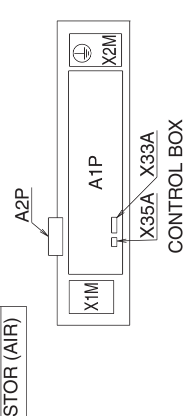


2.2 Indoor Unit

FCQ18PAVJU / FCQ24PAVJU / FCQ30PAVJU
FCQ36PAVJU / FCQ42PAVJU



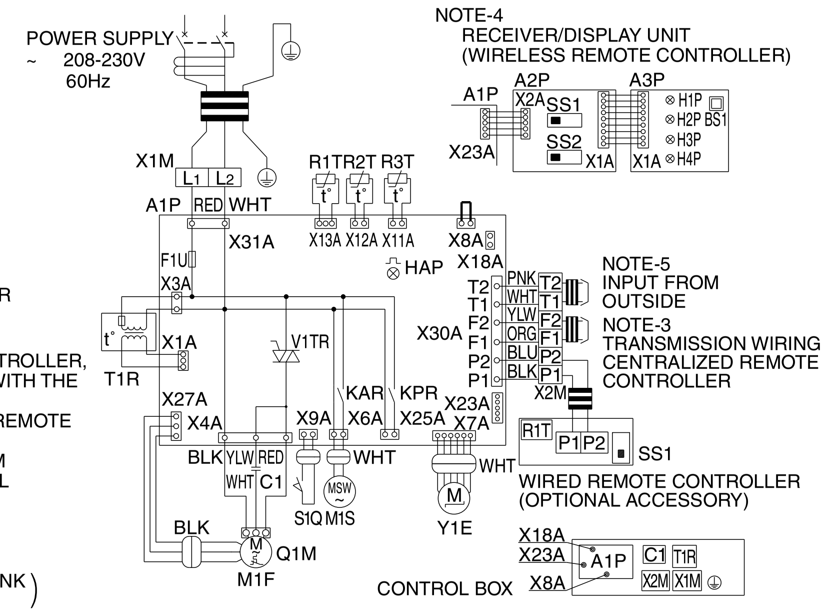
NOTES)
1. : TERMINAL, : CONNECTOR, : FIELD WIRING, : PROTECTIVE GROUND (SCREW), : NOISELESS GROUND
2. IN CASE USING CENTRALIZED REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
3. X33A AND X35A ARE CONNECTED WHEN THE OPTIONAL ACCESSORIES ARE USED.
4. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY THE REMOTE CONTROLLER. SEE INSTALLATION MANUAL FOR MORE DETAILS.
5. SYMBOLS SHOW AS FOLLOWS:
RED: RED BLK: BLACK WHT: WHITE YLW: YELLOW GRN: GREEN
ORG: ORANGE BRN: BROWN PNK: PINK GRY: GRAY BLU: BLUE



INDOOR UNIT	
A1P	PRINTED CIRCUIT BOARD
A2P	PRINTED CIRCUIT BOARD
C105	CAPACITOR
F1U	FUSE (B), 5A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR GREEN)
KPR	MAGNETIC RELAY (M1P)
M1F	MOTOR (INDOOR FAN)
M1P	MOTOR (DRAIN PUMP)
M1S	MOTOR (SWING FLAP)
R1T	THERMISTOR (AIR)
R2T	THERMISTOR (COIL LIQUID)
R3T	THERMISTOR (COIL GAS)
S1L	FLOAT SWITCH
V1R	DIODE BRIDGE
X1M	TERMINAL STRIP
X2M	TERMINAL STRIP
Y1E	ELECTRONIC EXPANSION VALVE
Z1C	FERRITE CORE
Z1F	NOISE FILTER
PS	POWER SUPPLY CIRCUIT
CONNECTOR FOR OPTIONAL ACCESSORIES	
X33A	CONNECTOR (ADAPTOR FOR WIRING)
X35A	CONNECTOR (GROUP CONTROL ADAPTOR)
WIRED REMOTE CONTROLLER	
R1T	THERMISTOR (AIR)

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FHQ18PVJU / FHQ24PVJU / FHQ30PVJU
FHQ36MVJU / FHQ42MVJU



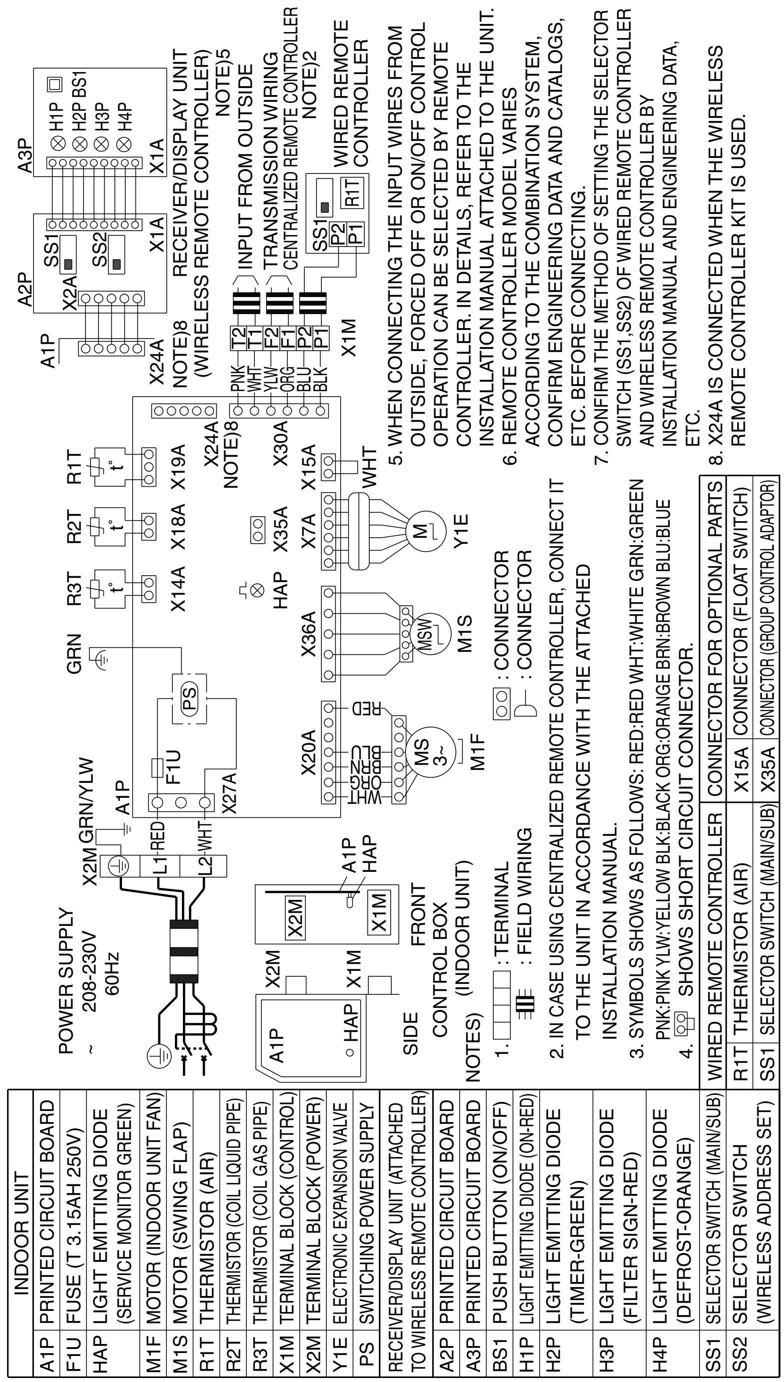
INDOOR UNIT	
A1P	PRINTED CIRCUIT BOARD
C1	CAPACITOR (M1F)
F1U	FUSE (Ⓑ5A, 250V)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN)
KAR	MAGNETIC RELAY (M1S)
KPR	MAGNETIC RELAY
M1F	MOTOR (INDOOR UNIT FAN)
M1S	MOTOR (SWING FLAP)
Q1M	THERMO. SWITCH (M1F EMBEDDED)
R1T	THERMISTOR (AIR)
R2T	THERMISTOR (COIL LIQUID)
R3T	THERMISTOR (COIL GAS)
S1Q	LIMIT SWITCH (SWING FLAP)
T1R	TRANSFORMER (208-230V/25V)
V1TR	TRIAC
X1M	TERMINAL BLOCK (POWER)
X2M	TERMINAL BLOCK (CONTROL)
Y1E	ELECTRONIC EXPANSION VALVE
WIRED REMOTE CONTROLLER	
R1T	THERMISTOR (AIR)
SS1	SELECTOR SWITCH (MAIN/SUB)
RECEIVER/DISPLAY UNIT (ATTACHED TO WIRELESS REMOTE CONTROLLER)	
A2P	PRINTED CIRCUIT BOARD
A3P	PRINTED CIRCUIT BOARD
BS1	PUSH BUTTON (ON/OFF)
H1P	LIGHT EMITTING DIODE (ON-RED)
H2P	LIGHT EMITTING DIODE (TIMER-GREEN)
H3P	LIGHT EMITTING DIODE (FILTER SIGN-RED)
H4P	LIGHT EMITTING DIODE (DEFROST-ORANGE)
SS1	SELECTOR SWITCH (MAIN/SUB)
SS2	SELECTOR SWITCH (WIRELESS ADDRESS SET)
CONNECTOR FOR OPTIONAL PARTS	
X18A	CONNECTOR (WIRING ADAPTOR FOR ELECTRICAL APPENDICES)
X23A	CONNECTOR (WIRELESS REMOTE CONTROLLER)

NOTES)
1. [symbol] : TERMINAL BLOCK [symbol], [symbol]:CONNECTOR
   [symbol] : SHORT CIRCUIT CONNECTOR
2. [symbol] : FIELD WIRING
3. IN CASE USING CENTRALIZED REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTRUCTION MANUAL.
4. X23A IS CONNECTED WHEN THE WIRELESS REMOTE CONTROLLER KIT IS BEING USED.
5. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
6. SYMBOLS SHOW AS FOLLOWS.
   (BLU:BLUE BLK:BLACK ORG:ORANGE PNK:PINK RED:RED WHT:WHITE YLW:YELLOW)
7. USE COPPER CONDUCTORS ONLY.

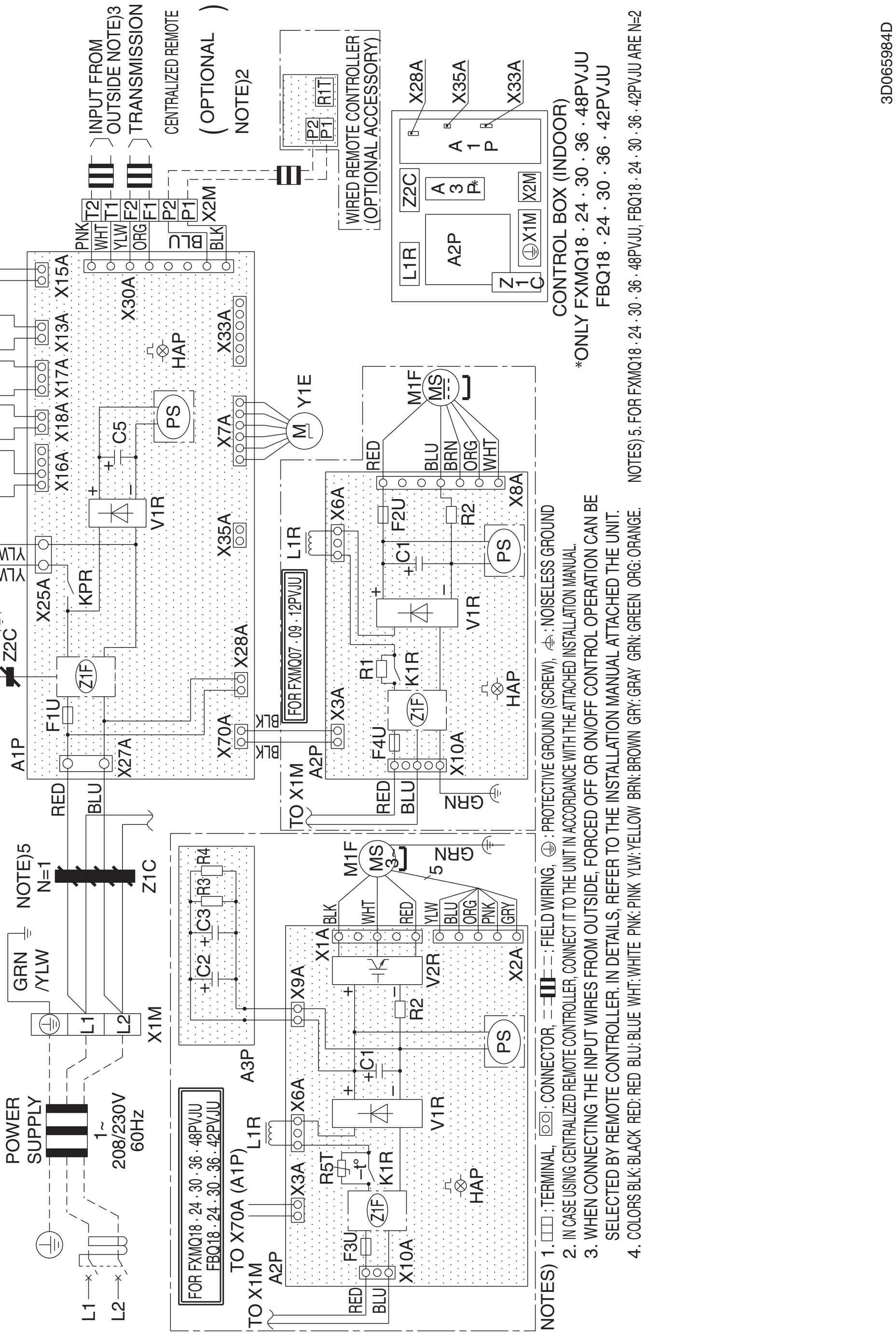
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FAQ18PVJU / FAQ24PVJU

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FBQ18PVJU / FBQ24PVJU / FBQ30PVJU / FBQ36PVJU / FBQ42PVJU



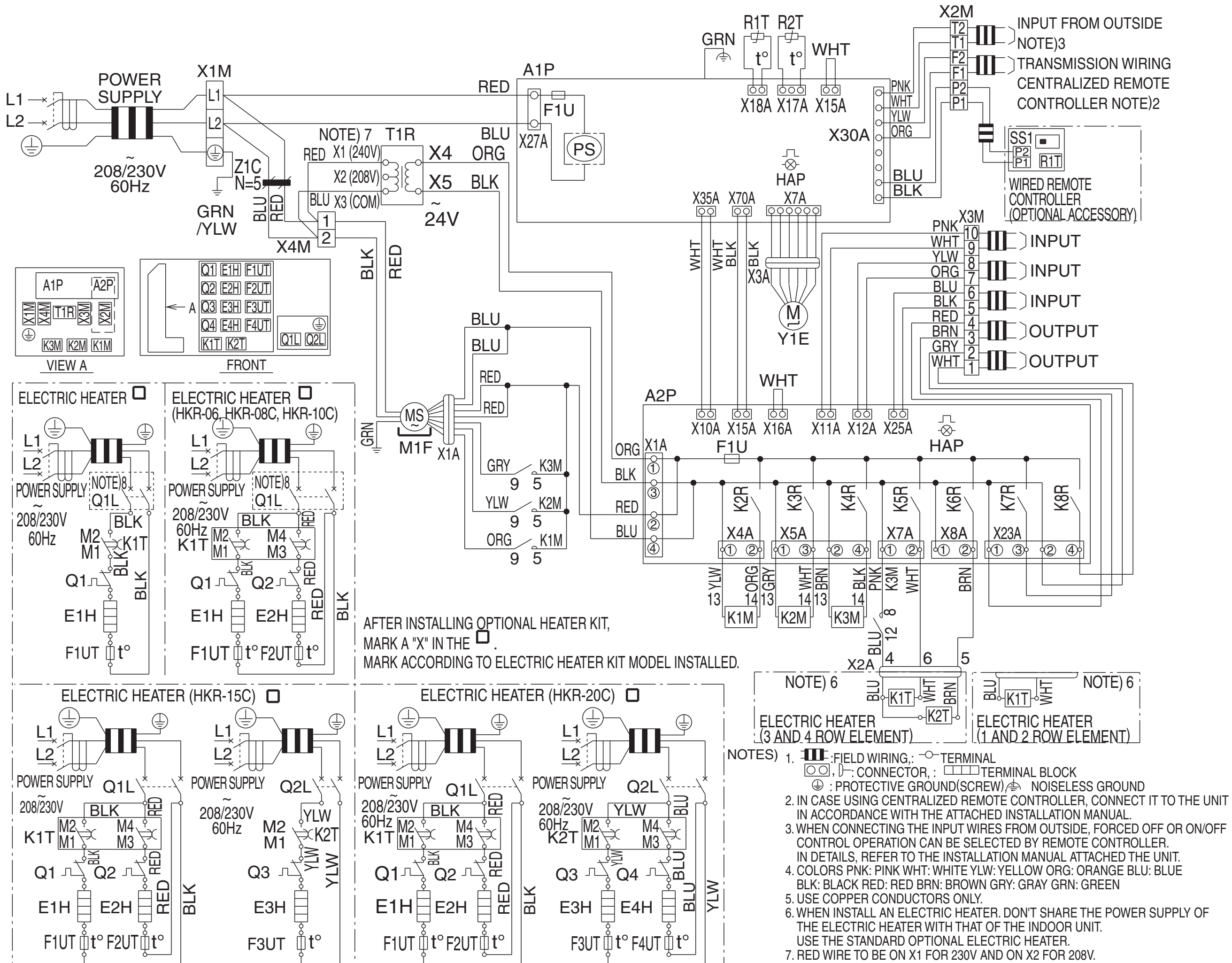
INDOOR UNIT			
A1P	PRINTED CIRCUIT BOARD	R2T	THERMISTOR (LIQUID)
A2P	PRINTED CIRCUIT BOARD (FAN)	R3T	THERMISTOR (GAS)
A3P	PRINTED CIRCUIT BOARD (CAPACITOR)	R4T	THERMISTOR (DISCHARGE AIR)
C1, C2, C3, C5	CAPACITOR	R5T	THERMISTOR NTC (CURRENT LIMITING)
F1U	FUSE (T, 3.15A, 250V)	S1L	FLOAT SWITCH
F2U	FUSE (T, 5A, 250V)	V1R	DIODE BRIDGE (A1P, A2P)
F3U	FUSE (T, 6.3A, 250V)	V2R	POWER MODULE
F4U	FUSE (T, 6.3A, 250V)	X1M	TERMINAL STRIP (POWER SUPPLY)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN) (A1P, A2P)	X2M	TERMINAL STRIP (CONTROL)
KPR	MAGNETIC RELAY	Y1E	ELECTRONIC EXPANSION VALVE
K1R	MAGNETIC RELAY	Z1C, Z2C	NOISE FILTER (FERRITE CORE)
L1R	REACTOR	Z1F	NOISE FILTER (A1P, A2P)
M1F	MOTOR (FAN)		CONNECTOR OPTIONAL ACCESSORY
M1P	MOTOR (DRAIN PUMP)	X28A	CONNECTOR (POWER SUPPLY FOR WIRING)
PS	SWITCHING POWER SUPPLY (A1P, A2P)	X33A	CONNECTOR (FOR WIRING)
R1	RESISTOR (CURRENT LIMITING)	X35A	CONNECTOR (ADAPTOR)
R2	CURRENT SENSING DEVICE		WIRED REMOTE CONTROLLER
R3, R4	RESISTOR (ELECTRIC DISCHARGE)	R1T	THERMISTOR (AIR)
R1T	THERMISTOR (SUCTION AIR)		

NOTES)
1. ▭ : TERMINAL, ▭ : CONNECTOR, ═╫╫═ : FIELD WIRING, ⏚ : PROTECTIVE GROUND (SCREW), ⏚ : NOISELESS GROUND
2. IN CASE USING CENTRALIZED REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
3. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
4. COLORS BLK: BLACK RED: RED BLU: BLUE WHT: WHITE PNK: PINK YLW: YELLOW BRN: BROWN GRY: GRAY GRN: GREEN ORG: ORANGE.

NOTES) 5. FOR FXMQ18 · 24 · 30 · 36 · 48PVJU, FBQ18 · 24 · 30 · 36 · 42PVJU ARE N=2

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FTQ18PAVJU / FTQ24PAVJU



INDOOR UNIT		K2R~K8R	MAGNETIC RELAY (A2P)	X1M	TERMINAL STRIP (POWER SUPPLY)	SS1	SELECTOR SWITCH (MAIN/SUB)
A1P	PRINTED CIRCUIT BOARD (MAIN)			X2M	TERMINAL STRIP (CONTROL)	ELECTRIC HEATER	
A2P	PRINTED CIRCUIT BOARD (SUB)	M1F	MOTOR (FAN)	X3M	TERMINAL STRIP (CONTROL)	E1H~E4H	ELECTRIC HEATER
F1U	FUSE (T, 3.15A, 250V) FOR (A1P, A2P)	PS	SWITCHING POWER SUPPLY (A1P)	X4M	TERMINAL STRIP (POWER SUPPLY)	F1UT~F4UT	TEMPERATURE FUSE (199.4°F)
HAP	LIGHT EMITTING DIODE (SERVICE MONITOR-GREEN) (A1P, A2P)	R1T	THERMISTOR (LIQUID)	Y1E	ELECTRONIC EXPANSION VALVE	K1T, K2T	TIME DELAY RELAY
		R2T	THERMISTOR (GAS)	Z1C	NOISE FILTER (FERRITE CORE)	Q1~Q4	THERMAL LIMIT
K1M~K3M	MAGNETIC RELAY	T1R	TRANSFORMER 208V/24V, 240V/24V		WIRED REMOTE CONTROLLER	Q1L, Q2L	CIRCUIT BREAKERS
		X1A~X3A	CONNECTOR	R1T	THERMISTOR (AIR)		

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Warning

- Daikin products are manufactured for export to numerous countries throughout the world. Prior to purchase, please confirm with your local authorized importer, distributor and/or retailer whether this product conforms to the applicable standards, and is suitable for use, in the region where the product will be used. This statement does not purport to exclude, restrict or modify the application of any local legislation.
- Ask a qualified installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Use only those parts and accessories supplied or specified by Daikin. Ask a qualified installer or contractor to install those parts and accessories. Use of unauthorized parts and accessories or improper installation of parts and accessories can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Read the User's Manual carefully before using this product. The User's Manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings.

If you have any inquiries, please contact your local importer, distributor and/or retailer.

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Cautions on product corrosion

1. Air conditioners should not be installed in areas where corrosive gases, such as acid gas or alkaline gas, are produced.
2. If the outdoor unit is to be installed close to the sea shore, direct exposure to the sea breeze should be avoided. If you need to install the outdoor unit close to the sea shore, contact your local distributor.

JMI-0107

Organization:
DAIKIN INDUSTRIES, LTD.
AIR CONDITIONING MANUFACTURING DIVISION

Scope of Registration:
THE DESIGN/DEVELOPMENT AND MANUFACTURE OF COMMERCIAL AIR CONDITIONING, HEATING, COOLING, REFRIGERATING EQUIPMENT, HEATING EQUIPMENT, RESIDENTIAL AIR CONDITIONING EQUIPMENT, HEAT RECLAIM VENTILATION, AIR CLEANING EQUIPMENT, COMPRESSORS AND VALVES.

JQA-1452

Organization:
DAIKIN INDUSTRIES (THAILAND) LTD.

Scope of Registration:
THE DESIGN/DEVELOPMENT AND MANUFACTURE OF AIR CONDITIONERS AND THE COMPONENTS INCLUDING COMPRESSORS USED FOR THEM

EC99J2044

All of the Daikin Group's business facilities and subsidiaries in Japan are certified under the ISO 14001 international standard for environment management.

Dealer

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Carrollton, TX75006
info@daikinac.com
www.daikinac.com

- Specifications, designs and other content appearing in this brochure are current as of February 2012 but subject to change without notice.

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